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THE MEDICAL WITNESS*

HISTORICAL SKETCH OF THE MEDICAL WITNESS—LAW RELATING TO

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FROM the very twilight of our legal history courts have looked to members of the medical profession for aid and assistance in the administration of justice; and yet the medical witness, as we know him, is a comparatively modern innovation. In the beginning the physician or surgeon was not called as a witness to give evidence before the jury, but as a sort of assessor or assistant to the court. The earliest recorded instance that I know of was of that character. In 1353, in an appeal of Mayhem, which consists in maiming a person in such a way as to destroy or diminish his power of defending himself, the judges were in doubt, after viewing the wound, whether or not the offence amounted to Mayhem, and they directed that two surgeons of skill should be called, not to give evidence before the jury, but "to inform the King and his Court" on the point. It must be remembered that trial by jury was then in its infancy, and was a very different proceeding from what it is to-day. The older modes of trial by battle, ordeal or compurgation were still recognized, but were gradually being superseded by the newer method. The practice of examining witnesses before the jury had not then been introduced. They arrived at a verdict from their own personal knowledge, or from the result of such inquiries as they chose to make. When the judges were in doubt upon any point involving scientific questions, they took the opinion of men skilled in that particular science, and then delivered their opinion on the

point to the jury as a matter of law. That probably accounts for the fact that when medical men were called in they were first used as assessors rather than as witnesses. Just when the medical expert ceased to be an assessor and became a witness it is impossible to say. We do know that the change did not take place until long after the practice had arisen of taking the evidence of common witnesses before the jury. That practice was fully established in the fifteenth century, and we have the authority of Mr. Justice Saunders, one of the Elizabethan Judges (*Buckly v. Thomas*, 1 Plowden at 124), that "if matters arise in our law which concern other sciences or faculties, we commonly apply for the aid of that science or faculty which it concerns." Still later, in the time of James First, we find the same procedure followed in the case of *Alsop v. Bow-trell*, Cro. Jac. 541, decided in 1620; the question involved was the legitimacy of a child born to a widow forty weeks and nine days after the death of her husband. Upon the opinion of "two doctours of physie" and one "physician in the nature of a midwife", the court decided and so told to the jury that the child might be legitimate.

From the time of its introduction in the twelfth century the system of trial by jury had been undergoing steady development and by the sixteenth century the twelve men, although still entitled to act upon their own knowledge of the facts, were generally guided by the sworn evidence of witnesses. When the necessity arose of having the opinion of men skilled

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in any particular science, it became the practice to take their opinion upon oath in the presence of the jury, as in the case of common witnesses. And although such expert opinion was for the enlightenment of the court only, the jury having heard it soon fell into the habit of giving effect to it in their verdict. In this way, by slow degrees, the right to consider and give effect to the evidence of scientific witnesses passed from the judge to the jury. The transition was complete before the end of the seventeenth century, and since that time the weight and importance to be attached to the evidence of the expert witness is for the jury, just as it is in the case of other witnesses. At the present day the value of medical testimony in the administration of justice, both civil and criminal, is fully recognized. Few, if any, cases involving death, personal injury, or mental capacity, are or can be now properly tried without the evidence of one or more skilled medical witnesses.

The subpoena.—The evidence which medical men are from time to time called upon to give is of two kinds. In the first place it may consist of matters which have fallen under their own observations, facts which they have seen with their own eyes, and as to which they can speak with more or less positiveness, depending upon the clearness of their recollection. As to such evidence they are what is known as common witnesses. But when they are asked to interpret facts which have not fallen under their own observation, or which have been deposed to by others, and as to which they have no personal knowledge, and give their opinion upon them, they cease to be common witnesses and become experts. In whichever capacity their evidence is required, obviously the first question to arise is by what process can they be compelled to attend before the court requiring their testimony and submit to being sworn and examined. The process made use by all courts, civil or criminal, for the purpose of compelling the attendance of witnesses is a subpoena or summons, but the conditions under which obedience to the subpoena or summons may be enforced depend upon whether the action in which the evidence is required is a civil suit between individuals, or a criminal prosecution. In the latter case it is not necessary that witness fees or travelling expenses should be paid

or tendered with the subpoena: Crankshaw, 1924 ed. at 764. The obligation to obey the precept is imperative and no excuse will avail short of physical inability to travel, or the lack of funds necessary to pay travelling expenses. A witness refusing to obey a subpoena or summons in a criminal case may be arrested and brought to court in custody, or may be prosecuted and punished for contempt. In the case of a civil action a witness is not obliged to obey a subpoena unless witness fees and travelling expenses to the amount fixed by the court are paid in advance. In the case of a doctor the prescribed witness fee is \$6.00 per day, and travelling expenses beyond five miles not exceeding twenty cents per mile, one way. Refusal to obey a civil subpoena may be punished as a contempt and the defaulter is liable to the party who required his evidence for all damage he may have sustained by the witness' default. Whether or not a medical man who has no knowledge of the facts is bound to obey a subpoena and attend as a witness to give opinion evidence only, is still a moot point. Two learned judges have decided that a scientific witness can be compelled to attend to speak as to facts but not as to matter of opinion only. Others hold the view that a subpoena, being the precept of the King's Court, no person has a right to treat it as a "scrap of paper", but must obey it under penalty of being liable for contempt. The better opinion appears to be, as recently ruled by the Court of Appeal of Nova Scotia in *Rex v. Hubley*, (1925) 1 D.L.R. 494, that in a criminal case a medical witness cannot refuse to attend and give evidence on the ground that his witness fees have not been paid or secured, although he has no knowledge of the facts and is only required to give an expert opinion. The safe course for the witness to follow is to obey the subpoena, and if he considers himself aggrieved, submit his rights to the court before being sworn. The question is one of some practical importance, because the doctor who is subpoenaed to give opinion evidence only, if not compellable may stipulate that before doing so, his services be paid for, not at the tariff rate of \$6.00 per day, but on a proper professional scale.

Evidence given under oath.—All evidence in both civil and criminal proceedings must be given under oath. There is no special form of

oath to be taken by all witnesses; any form of oath which the witness asserts to be binding upon his conscience may be administered and will be sufficient to sustain a prosecution for perjury in the event of the evidence given being wilfully and corruptly untrue. If a witness objects to taking an oath on the ground of conscientious scruples, he may instead make an affirmation that the evidence to be given shall be the truth, the whole truth, and nothing but the truth.

Should take notes in certain cases.—The doctor who has been called in a case of personal injuries, whether or not they have or are likely to result in death, should have in mind the possibility of his subsequently being called as a witness to relate the facts as he found them, and to offer an opinion as to how the injuries were occasioned and their probable consequences. The life or liberty of a human being, or the result of a civil claim for damages, may depend upon the accuracy of his observations and the clearness of his recollection. He is generally early on the scene, because the first thought of those present in the event of an injury, accidental or otherwise, is to send for a doctor. There is a species of lawyers, happily rare, known as "Ambulance chasers," who sometimes beat the doctor to it, but the doctor usually gets there first. His first thought is, of course, to ascertain the nature and extent of the injury and to take the necessary measures to promote recovery, or save, or prolong life. In that he is acting solely in his character of a medical man, and if there was no possibility of an aftermath of litigation, civil or criminal, that would be all that would be required of him. But because of the possibility of such aftermath, and the practical certainty that he will be required as a witness he should very carefully observe and make written notes of all the facts and circumstances concerning which he may subsequently be required to give evidence. These are infinite, and include, of course, the nature and extent of the injuries, the organs affected, and by what instrument or means they were probably inflicted, whether serious or otherwise, the position of the body, and all the surrounding marks. The written notes should be made at the time, or soon thereafter, when the facts are still fresh in his memory. Notes made afterwards are useless and cannot be used. When he is

later called as a witness he will be allowed to use these notes to refresh his memory and the fullness and accuracy with which he has made them will tend greatly to strengthen his credit with both judge and jury. Remember you can only use your original notes, not a copy subsequently made, therefore produce the original notes, however rough they may be.

Dying declaration.—If death appears to be imminent and the injured person believes it to be so, his statement as to the circumstances of his injury should be written down. Such a statement is called a dying declaration. It is admissible only after the injured person's death in a criminal prosecution for his murder or manslaughter, and only insofar as it relates to the circumstances of the death. It is not admissible in civil proceedings, nor when the charge does not amount to homicide. The admission of a dying declaration is an exception to the fundamental principle that an accused person has the right to subject all evidence against him to the test of cross-examination. Obviously a dying declaration cannot be so tested, but the law assumes that no person will lie when face to face with eternity and that under the sense of inevitable death he will tell the truth. But before admitting it the judge must be satisfied that it was made under a settled, hopeless expectation of death. It is not necessary that the declarant should believe death to be an immediate prospect so long as he has abandoned all hope of surviving beyond a short time. If he thinks there is a possibility of recovering when he makes the declaration, although he may soon after die of his injuries, it is inadmissible. On the other hand if he made it in the hopeless expectation of death it is admissible, although he subsequently for a time cherished a hope of recovery. If the doctor believes death to be inevitable he should so tell the patient and carefully note whether in the patient's mind his condition is hopeless. He should then ascertain from the dying person the circumstances under which he received his injuries and commit the statement made to writing, either then or shortly afterwards. If time and circumstances will permit, and the dying person is able, he should be asked to sign the statement. If it is in the form of question and answer, both questions and answers should be put down, but the questions should not be such as to suggest the answer. It

is not essential that a dying declaration should be signed or even put into writing, but in no case should a doctor rely upon his memory alone of what the dying man said. If death is not imminent, the wise course for the doctor to pursue is to notify the proper authorities of the injured person's condition and permit them to look after the obtaining of the declaration.

Examination-in-Chief.—When the medical witness is called and sworn, he is first examined by counsel for the side by which he is called. This is called the examination-in-chief. During such examination counsel may not put what are known as leading questions, that is to say, questions which suggest the answer. That rule is based on the assumption that the witness is favourable to the side upon which he is called, and although medical witnesses should be absolutely impartial the same rule applies to them as to common witnesses. The only exception to this rule is when the judge is satisfied that the witness is hostile, not merely adverse. In that case counsel may be given leave to put leading questions. In giving evidence in chief, the medical witness is not permitted to quote in support of his opinion from medical books, although recognized as standard authorities, not even from a book written by himself, but when he comes to be cross-examined, counsel for the other side may quote from books of recognized authority and ask the witness if he agrees with the author.

Use simple language.—One caution which the medical witness should always observe, and that is to use language within the comprehension of the jury. Language which would be quite appropriate when addressing a medical association may go completely over the head of the jury, and even of the judge and counsel. All will understand what is meant by a "black-eye," but some may fail to understand what is meant by "tumefication of the orbit." I have heard of a medical witness who, instead of describing a man as being bald, said he was afflicted with phalacrosis, and when asked to explain that disease said it was a chronic disease of an inflammatory character which affected certain cranial tissue. When asked how it affected those who suffered from it he disclaimed being an expert on the question, but said he had known some to become raving maniacs, but others who developed no abnormal tendencies at all. In that way a very

simple fact was so befogged by the language used to describe it as to be beyond the average comprehension. In that case the learned doctor's purpose was to create the impression that the accused was suffering from some fell disease of the head, and so induce the jury to acquit him, which they promptly did. By education the medical man is accustomed to the use of technical language in describing anatomical and pathological details, but when he appears as witness in court he should remember that he is not there to display his erudition, but to make his statement of fact or opinion clear to the understanding of men largely, if not entirely, ignorant of technical terms. It may be that considerable paraphrasing may be necessary to bring technical terms within the comprehension of the jury, but the result will compensate for the effort. A medical witness can derive very little satisfaction from the knowledge that by his evidence he has succeeded in confusing rather than enlightening those by whom possibly the fate of a human being is to be decided.

Cross-examination.—When the examination-in-chief has been concluded, the cross-examination by counsel representing the other side takes place. If the witness has deposed to facts only, as distinguished from opinions, the cross-examination will probably be simple, or counsel may himself seek to elicit an opinion favourable to his own side. He is not likely to take that hazard unless he has reason to expect a favourable answer. But if opinions adverse to the cross-examining counsel have been expressed by the witness in chief, the effort of counsel will be to break down or discredit those opinions. Leading questions may now be freely put to the witness on the theory that he is hostile to that side and will conceal all favourable facts unless they are dragged out of him. His qualification and experience will be inquired into; quotations from medical books will be read to him, and he will be asked whether or not he agrees with the views there expressed. He probably will be confronted with his deposition taken before the coroner, or in the police court, and, in short, the opinion he has given will be assailed and his credit attacked in every way which the ingenuity or resourcefulness of counsel may suggest. Medical witnesses, as well as others, have sometimes complained, and with reason, of the liberty accorded by the law to cross-examining counsel.

The complaints do not usually come from the medical witness who knows his subject and has expressed no opinions for which he is not prepared to assign a solid basis and has answered all questions without exaggeration or concealment. Such a witness has little to fear from cross-examination, and shrewd counsel will quickly discover that any attempt to discredit the witness will only result in strengthening the case against his own client. It is only rarely now that counsel will undertake to bully or browbeat an honest witness. Both courts and juries frown upon such a practice, and even the most obtuse counsel have learned that such tactics only recoils upon their own client. I have seen a jury so incensed by the attempt of counsel for the accused to discredit the chief witness for the prosecution that they convicted on very insufficient evidence.

In the interests of truth the law allows counsel very great latitude in cross-examination. He has a right to ask any question relevant to the issue, that is, which will tend to establish his own side or weaken or destroy the side of his adversary. But he may do more. He may ask questions tending to discredit the witness; to show that he is unworthy of belief. When a question is directed to the credit of the witness and is not otherwise relevant, counsel is bound by the witness' answer and cannot call other witnesses to contradict him except where the witness is asked if he has been convicted of a crime and denies it, the record of the conviction may be put in evidence against him. But while great liberty is allowed counsel, he must not abuse it by asking questions conveying an imputation of dishonesty or crime without some reasonable ground for believing the imputation to be true, nor is he allowed to make any comment on the evidence of the witness, however unfavourable, while he is in the box. To do so would at once expose counsel to a sharp reprimand from the Bench. My advice to all witnesses in such circumstances is to keep your temper. Do not answer a question until you understand it; and then do so simply and clearly. If there is anything discreditable in your record which would affect the weight which the jury might attach to your evidence, the side against which you are testifying have a right to bring it out. Remember that counsel's purpose is not to insult or annoy you, but to save, it may be, the liberty

or even the life of a client, almost invariably believed by him to be innocent. So that if a question of that kind is asked of you, without any basis of truth, do not get angry or refuse to answer because you consider the question an insult, but answer it promptly, calmly and pointedly. Any display of anger or hesitation might leave in the mind of the jury the impression that perhaps the imputation was not wholly unfounded.

Opinion evidence carefully scrutinized.—Opinion evidence is properly regarded with more or less jealous scrutiny by both courts and counsel, and will continue to be so just so long as doctors themselves differ radically as to the proper deduction from the same state of facts. It is very easy to express an opinion, but difficult to ascertain whether or not it is honest or well founded. That honest differences should sometimes prevail is not surprising, but it is within the experience of all courts that solicitors on both sides of the controversy appear to find no difficulty in obtaining any amount of opinion evidence in support of the view they seek to have prevail. So long as solicitors are at liberty to search the whole profession for one or more calling themselves doctors, willing to adopt their views of the case, the profession must lie under this imputation, however unjust when applied to it as a whole. Accuracy in regard to facts may be tested in many ways, but when dealing with an opinion which he believes to be erroneous, counsel is driven to the necessity of impeaching the reputation or standing of the witness by whom it is expressed, or the basis on which it is founded.

Re-examination.—When the cross-examination has been completed the side by which the witness is called have the right to re-examine. The object is to clear up or explain any matters brought out in the cross-examination which are susceptible of explanation. Without the leave of the court the re-examination is confined to matters dealt with in cross-examination. As an example of effective re-examination, I read of a case where counsel in cross-examination asked a witness named Brown, with a view to discrediting him: Q: Have you living with you a woman who goes by the name of Mrs. Brown? A: I have. Q: Do you support her? A: I do. Q: Is she your wife? A: She is not. Counsel then with a significant glance at the jury sat

down. Then came the re-examination, consisting of one question and answer: Q: Is she your mother? A: She is.

Make adequate preparation.—No medical witness should come into court without adequate preparation. Unless he has made himself master of the subject before coming into the witness box he will find when too late that a little previous preparation might have enabled him to cut a much better figure than he did in the presence of the judge, jury and counsel. Almost any man can talk clearly and intelligently upon a subject which he understands, but unless he has a proper conception of it in his own mind he cannot convey a clear or satisfactory account of it to others. I cannot too earnestly impress upon the medical witness the imperative necessity, in the interest of justice, as well as for the credit of the medical profession, of making himself master of the subject before attempting to offer any opinion upon it in the witness box. For example, I heard of a case where a doctor in a trial for homicide expressed the confident opinion that the deceased had died of a particular kind of poison, basing his opinion upon the fact that the eyeballs had not contracted equally, but who was thrown into utter confusion in cross-examination by being asked if in the examination of the body he had discovered that the deceased had one glass eye, which was the fact.

Communication between doctor and patient not privileged.—A doctor is sometimes asked in the witness box questions relating to matters which have come to his knowledge or communications which have been made to him while in professional attendance upon a patient. All communications between solicitor and client are strictly privileged and a solicitor would not be permitted to disclose them, even if willing to do so, without the client's consent, and members of the medical profession have contended that *a fortiori* the same privilege should extend to communications between doctor and patient. They contend with a good deal of force that a doctor cannot fully discharge his duty to a sick person without prying into and obtaining a knowledge of matters which may involve the patient in crime or seriously affect his interests, and that these are matters they should not be obliged to disclose in either a civil or a criminal court. I am not here concerned with the policy of the law but merely to say what

the law is. And undoubtedly the law is clear that the medical witness has no privilege and that information, even of the most secret and confidential character derived by him in his professional relations with his patients, if relevant to any issues being tried in the courts, must, if required, be disclosed. That principle was laid down by the House of Lords during the trial of the Duchess of Kingston for bigamy in 1776, and has been adhered to ever since. In that case it was necessary to prove the marriage of the Duchess with Lord Bristol while her first husband was still living. For that purpose Dr. Hawkins, who had attended the Duchess professionally, was called as a witness and asked if he knew from her of any marriage between them. The doctor objected on the ground that to answer would be inconsistent with his professional honour, but on the judges being consulted they all agreed that he had no privilege and must answer. Lord Mansfield added that "if a surgeon was voluntarily to reveal these secrets, to be sure he would be guilty of a breach of honour and of great indiscretion; but to give that information in a Court of Justice which by the law of the land he is bound to do will never be imputed to him as any indiscretion whatever."

In the case of *Bank of British Columbia v. Anderson*, 2 C. D. at 650, the Master of the Rolls, Lord Jessel, said: "We know that in some foreign countries communications made to a medical man are privileged upon the ground that it is as desirable that a man shall be perfectly free in his communications with his medical man as that he shall be free in his communications with his lawyer. That has not been recognized in this country." And again in *Wheeler v. Marchant*, 17 C. D. at 681; the same learned judge said: "There are many communications which, though absolutely necessary because without them the ordinary business of life cannot be carried on, still are not privileged. The communications made to a medical man whose advice is sought by a patient with respect to the probable origin of the disease as to which he is consulted, and which must necessarily be made in order to enable the medical man to advise or prescribe for the patient, are not protected. Communications made to a priest in the confessional on matters perhaps considered by the penitent to

be more important even than his life or his fortune, are not protected. Communications made to a friend with respect to matters of the most delicate nature on which advisee is sought with respect to a man's honour or reputation are not protected."

That is the law of Canada, and in all the States to the south of us, except those in which it has been changed by statute.

In many of the European continental countries the law is different, and communications made to both priest and doctor are privileged.

The disclosures made by a witness when giving evidence in court, if pertinent to the issue,

are absolutely privileged and cannot be made the subject of an action for slander, even though untrue and spoken maliciously: *Seamen v. Netherclift*, 1 C. P. D. 540. A medical man is, however, bound to keep the secrets of his patient and not to voluntarily reveal them to a third party and if he do so out of court he may expose himself to an action for damages.

In this short address I have made no attempt to deal with the subject exhaustively, but only to touch lightly on a few of the points which are likely to be of the most practical importance.

An Address on CANCER PROPHYLAXIS

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WE of the medical profession all know the Book of Common Prayer, and the saying therein, "In the midst of life we are in death." Nothing more emphasizes the point of this saying than the annual devastation wrought by cancer round about us. In fact, it would seem at times more truthfully to read, "In the midst of death we are in life."

To-night I intend to speak of the prophylaxis of cancer. The word "prophylaxis" is a good one, though I grant you, it is a name applied here to a hope that is somewhat forlorn. It is derived from the Greek, and expresses an ability to guard, to "guard against." In its etymology, the word defines a large undertaking, when it professes to *guard*, to protect the human race from this dread disease. Unfortunately at the present this prophylaxis is imperfect and incomplete; for while the nature of the enemy remains unknown, protection against it must be haphazard and insecure.

I think it is no exaggeration to say that cancer is at present one of the great scourges of the human race, and that it is the most involved and difficult problem with which the science and the art of medicine are concerned. Although

it has been known in a vague and sinister way since our medical history began, it was only in the eighth decade of the last century, the "eighties," that its true nature was understood. And this, be it remembered, is scarcely fifty years ago. To quote Professor Oertel, "the merit of having recognized cancer as a tumour of epithelial origin, belongs to a surgeon: Thiersch of Leipzig... and the contrast of this tumour with the mesoblastic sarcoma was established at about the same time by Waldeyer, an anatomist of Breslau." Accordingly, only for something more than the average life-time has the histology of these two malignant tumours been definitely known, their pathological entity established. For my purpose this evening, I shall not distinguish between them.

It is essential that the great frequency of cancer should be borne in mind. Frederick L. Hoffman, a widely-known statistician, tells us that in Continental United States, there are each year 80,000 deaths from cancer. This means that in this country one person dies from this disease in every six and a half minutes. He contends also that cancer is on the increase, at the rate of 2.5 per cent per annum, and that

this increase is an actual one and not merely made apparent by means of better methods of investigation. Hoffman also states that, at forty years and upwards, one male out of every twelve, and one female out of every eight, is doomed to die of this disease. P. Brooke Bland of Philadelphia, paints the picture in another way when he tells us that, at the age of forty-five and upwards, cancer kills more people than tuberculosis, pneumonia, typhoid fever, and all other infectious diseases put together. In the modern city of Philadelphia, in the year 1922, 1,988 persons died of cancer.

This grave incidence of cancer is probably endemic throughout the world. No known country is exempt, and in a general way, the number of deaths assigned to it increases with the accuracy of the vital statistics. In Great Britain and Germany, the cancer-mortality is somewhat higher than it is with us; the highest mortality is in Switzerland and Denmark, partly due no doubt to a compulsory inspection of the dead. Cancer is common in Egypt, and in vegetarian Hindustan; in Japan it takes each year some 40,000 lives, and it extends even to the most distant islands of the sea. There is no doubt whatever of the world-wide tyranny of this disease.

Neither do the beasts of the field nor the fowls of the air escape. Cancer is frequently found among them, being especially common in the mammalia. The reptile is the only vertebrate in which no malignant growth has been described, and you will admit that *he* deserves it. Cancer occurs even in plants, and according to Erwin Smith, these tumours compare in malignancy with those of the higher kingdom.

I need not tell you that the etiology of this disease remains obscure; and this, despite an enormous investigation. This investigation began some forty years ago, with the belief that a parasite was the cause of the disease. This was the time, you remember, of the fruition of the brilliant work of Pasteur, Lister, and Koch, the birth of modern bacteriology. No wonder a faith was engendered that a parasite was the cause of all disease! While I grant that already we have nearly justified this belief, no specific cancer organism is yet forthcoming. And there have been many and sad disappointments. I myself remember the "Russell bodies," and the great furore in Edinburgh in

the early nineties, when these were heralded as the cause of cancer. Mistakenly heralded we admit, for very soon these were recognized as mere chromatin particles, arising from nuclear degeneration. No, the cause of cancer is not so simple. The pendulum of investigation has swung away from an organismal causation, and this, despite the recent work of Koch of Detroit, and Nasum of Chicago. In the words of Bashford, "Cancer is only transmissible by processes which are in sharp contrast to the known processes of infection, and in fact, exclude them."

The more recent studies of the last decade have revealed wider and more complicated fields of investigation. It is borne in upon us that the problem of cancer is but one aspect of the problem of growth, and we have come to learn that probably more than one cause is operative in the etiology of this disease. Though as yet we see this problem as through a glass darkly, yet in any study of prophylaxis, a working hypothesis is requisite; for, it is only in this practical way that we may meet the enemy at the gate.

Accordingly, I here submit a working hypothesis.

In general terms it may be stated that the maximum of cell-proliferation is attained early in intra-uterine life; that this cell-activity remains high during growth, is more or less uniform during maturity, and gradually diminishes with the onset of senescence. It follows that there must always be an ever-changing and renewed demand for cell-adjustment in what Oertel calls, our "morphological fluidity." No tissue and no organ is ever at rest; cell-proliferation and cell-regression are constantly at work, and their reciprocal relations are never fixed or quiescent. With the onset of senescence, and age, be it remembered, is not a matter of years but of tissues (nothing is more hereditary than old age) the demand for this cell-production is decreased. This decrease should be even and mutual between the tissues. Now, if by any chance, the cell-production should outlast the cell-demand in any tissue, there would at once result an over-production of cells and a loss of tissue-balance. With no work to do, these excess-cells would remain vegetative or embryonic, the de-differentiated cells of a tissue anaplasia. It is these de-differ-

entiated cells, these "idle hands" as it were, that constitute the menace. For, while they retain the fundamental attributes of nutrition and propagation, for them there is no demand for higher function, and so they may come to form an anarchistic rabble within the tissues.

The ideal and healthy old age is where there is a commensurate and reciprocal loss of cell-production among the tissues; where there are no excess-cells, and where the tissue-balance is maintained. Under these conditions, old age is a timely, a slow, a reciprocal decline toward a general decay. Anything, however, which precipitates or disturbs this rhythm of later life, either in a local or a general way, may determine a conflict between the tissues.

As I have said, this cell-adjustment, this cell-proliferation and cell-regression, is found more uniform and balanced throughout maturity. It is with the onset of senescence, and especially I take it of premature senescence, that there is prone to occur a disturbance in this cell-relationship.

As we know, cancer commonly commences during the terminal stages of the life-cycle, when the demand for cell-proliferation is on the decline. It is most frequently found during the terminal phases of cell-multiplication, whether in the general body or soma, or within the organs which this soma contains. We know that many organs have a distinct age-incidence of their own; that is, within the younger body, an older organ may, and does, exist. For example, the mamma and the uterus are already aged at the time of the menopause. In this way there is explained the respective age-incidence of cancer in the different organs of the body. In all vital essentials man, proud as he is, is a hollow cylinder—a mesoblastic cylinder, covered by, and lined by, an epithelium.

In general terms it may be said that the protection against the cancer cell, the carcinoma, is largely in the hands of the vascular mesoblast. So long as this mesoblast is richly cellular, with its blood-vessels numerous and thin-walled, it is well protected against epithelial invasion. But it is in this same vascular mesoblast, this blood-vessel tissue, that age-changes occur first, and are more pronounced. These age-changes, as described by Theilhaber, show the following features:—

The connective-tissue cells atrophy and

diminish in number, as the blood-vessels become fewer and smaller, and show thicker walls. The whole tissue becomes thereby less vascular, and less cellular, in a word, less resistant. These changes mark a definite dystrophy in this mesoblastic tissue, and conspire, as it were, to an epithelial trespass, for, as Theilhaber states, "the epithelium whether epiblast or hypoblast, is the last to show a retrogressive metamorphosis." Moreover, with the onset of age, the circulation as a whole is impaired, by reason of a vessel-atheroma, with or without a cardio-syndrome. The blood-forming organs deteriorate, for the spleen and the lymph-glands shrink, and become atretic; while the bone-marrow, no longer red and lymphoidal, appears yellow, fatty, and sparsely cellular. In consequence, there results a marked deterioration, both in the body fluids and the fixed tissues. It is the cardio-vascular system that suffers first and most, the age-changes hit the individual where he lives.

These are the general changes of age, and the one change is somewhat consequent upon the other. As I have said, these age-changes occur first, and are more pronounced, in the blood-vessel tissue, and now we may add that the disposition to cancer is in the inverse ratio to the quality of the blood and to the blood supply. We admit that cancer follows on the terminal phases of cell-multiplication, and we believe that the cancer-tendency is especially marked when these terminal phases are sudden, premature, and in consequence, unbalanced. If this be true, the untimely occurrence of senescence may prove the determining factor in a cell de-differentiation, an anaplasia, where certain groups of epithelial cells remain vegetative, or embryonic; at the same time, the resistance of the mesoblast is already impaired, and so the stage is set for a possible cancer invasion.

It is probable that chronic irritation, with its consequent fibrosis, its scar-formation, acts locally in some similar way. About the base of the resulting callous, ulcer, burn, or scar, there is produced a premature senility in the underlying tissue. The tissue becomes less succulent, and less cellular, is in a word, less resistant, to the adjacent epithelium, for it has suffered in very truth a localized old age.

While the above explanation is inevitably inadequate, in the etiology of cancer, so much

remains unknown, it nevertheless affords the working hypothesis of which I have spoken.

Admittedly, there are the two factors which are concerned in the origin of cancer; the one is the occurrence of general senile changes, and the other is the effect of chronic irritation. The practical question is, are there any means by which we can modify the one, and prevent the other? Here, if anywhere, an ounce of prevention is worth many pounds of cure; and it is this possible prevention that we designate a true prophylaxis.

Accordingly, we may divide this prophylaxis in the following way:—A general prophylaxis, and a special prophylaxis.

The general prophylaxis will deal, as a matter of course with the general health of the body; with nutrition, or over-nutrition; and the factors that conspire toward a premature senescence. Diet is a factor here, in respect of both quantity and quality, and the vegetarian does not escape. If this diet contain or manifest a noxious irritant, it falls into the second division of special prophylaxis which will concern itself with body-hygiene, within or without, and the possible escape from all persistent irritation.

I shall first deal, very shortly, with general prophylaxis.

The rules for guidance here may be summed up in the one phrase, "a simple life," of maintaining a sound mind in a diligent and useful body. Dr. Hindhede of Copenhagen, asserts that "in civilized countries, the higher standard of living during the last fifty years has been attended by a marked increase in the cancer death-rate"; and he also states that "in England there is a higher death-rate from cancer in classes that indulge in high living, than in those who live frugally." He says of his own country, Denmark, that "cancer is the cause of death for every fifth person who dies after the age of forty-five; there is no other country in which there are so many fat men and fat women, and in no other country is the daily fare so rich." The death-rate from cancer is high in fat people. Dr. Hindhede lays special stress on the over-consumption of meat. Speaking of America, Dr. C. W. Saleeby, the noted publicist, observes that "over-eating is now almost the only physiological sin generally committed in the United States." As regards our

women he might have said, over-eating and lack of exercise.

Now, all this over-eating (or over-drinking), this over-loaded nutrition, means inevitably a premature old age, a lowering of resistance, and a disturbance of balance between the tissues. We have indicated the way in which this body-degeneration may induce a cancer-influence, and the remedy thereof is not only simple, but self-evident.

I have purposely omitted the question of heredity, for there is no agreement here, not even a large consensus of opinion. Moreover, as regards prophylaxis, it is rather a hopeless consideration, seeing that, in the present state of even the most modern eugenics, it is still impossible to get ourselves well born. May I simply mention the exhaustive research in mouse-cancer, of Dr. Maud Slye, of the Sprague Institute, Chicago, and her enunciation that in mice, cancer and non-cancer tendencies are unit characters, then one recessive and the other dominant, and that these segregate and transmit themselves in a true Mendelian ratio. Dr. Slye presents this biological evidence of the inheritability of cancer in man, and states that there is therefore a "ready and certain genetic method of escape." Even granting the truth of her contention, the escape in man is not so ready, for "the best-laid schemes of mice and men gang aft a-gley."

The avowed influence of an avitaminosis, a vitamine-starvation, in the causation of cancer is, as yet, purely theoretical.

Special prophylaxis is concerned with the avoidance and removal of all possible forms of chronic irritation. Billroth stated many years ago, that, "without previous chronic inflammation cancer does not exist, and we are all agreed that frequently, it is the immediate cause, the occasion, of this disease." You are all familiar with these irritants, their name is legion, and their number increases from year to year. They affect chiefly the skin-surface, the alimentary tube, and the urino-genital canal. As regards the alimentary tube, one or two facts are of special interest. The frequency-curve of cancer in men and women crosses at the level of the stomach. In men, cancer is more frequent in front of the stomach, in the oesophagus and in the buccal cavity, and we can guess the reason; while in women, it is more

frequent behind the stomach, in the bowel, and here the irritating agent is constipation. In China, rice is eaten very hot by the men, who are served first by the women; in consequence, the latter get their rice cold, and the reward of their service is an escape from cancer of the oesophagus, so common in the men.

May I add that cancer of the larynx is extremely uncommon in women, which bespeaks, in this situation, a high degree of resistance.

It is of course true that the several systems of the body require, each, an individual prophylaxis. The genital tract of the female demands special mention, for here cancer kills frequently; it is a cruel death, and so much can be done in the way of prophylaxis.

In the woman, the uterus is the organ most frequently affected by primary cancer, as the cancer here represents about 30 per cent of the total number. The cervix is the more common site of this lesion, for it occurs here nine times more frequently than it does in the uterine body. Seventy-five per cent of these cervical cancers are found in parous women. The cervical injuries of child-birth are at once evident as a predisposing factor. Professor James Ewing states that, "repeated cervical laceration disturbs the normal structure and function of this tissue... and that a chronic endo-cervicitis precedes cancer in the great majority of cases." It is true that cervical cancer occurs in the nulliparous, and also in the virgin cervix, where the common predisposing lesion is the cervical "erosion," with or without heterotopia of the lining epithelium. The corpus carcinoma frequently succeeds a senile endometritis, and it is associated with about 10 per cent of sub-mucous fibroids.

As I have said, much can be done here in the way of prophylaxis, and, naturally, this consists in the treatment, or removal of these irritants, these predisposing factors.

The following are good prophylactic rules:—

1.—If in any case of labour, the delivery has been affected by forceps, or by a breech extraction; if the child has been unusually large, or the labour precipitate; make an immediate examination of the cervix. If a tear be found deeper than half an inch, co-apt the raw surfaces of this tear by interrupted catgut sutures.

2.—In any obstetrical case, make invariably a "discharge examination." If any cervical

lesion be found, treat it, or if repair be necessary, execute this at the end of lactation.

3.—If at any time in the woman's menstrual life, the menstrual habit be depraved, in the way of a menorrhagia, a metrorrhagia, or a leucorrhœa, make a thorough examination. It may be necessary to explore, or even to curette the uterus. Identify the lesion by the naked-eye or microscope, and treat it as it deserves.

4.—Uterine bleeding, however slight, or a conspicuous leucorrhœa, occurring after the menopause, are danger-signals. In such a case, if free bleeding follow the passage of a uterine sound, or the curettings be abundant, perform an immediate hysterectomy.

5.—Remove by hysterectomy all sub-mucous, or intra-mural fibroids.

By following these rules, we prosecute a true prophylaxis, and we will save many lives.

There have recently been treated in our service in the Royal Victoria Hospital, Montreal, sixty-three cases of cancer of the uterus. Of these, fifty were of the cervix, and thirteen of the body. In the history of the cervical cancers, the initial sign was irregular bleeding in thirty-two cases; a conspicuous leucorrhœa in eleven cases; and the late symptom of pain, in seven. In all these cases, some considerable time elapsed before the patient sought advice. In the thirty-two cases of uterine haemorrhage, the bleeding had lasted from two months to a year and a half, with an average duration of seven months. In the eleven cases of a conspicuous leucorrhœa, this had been noticed for from two months to three years, with an average duration of thirteen months.

In the thirteen cases of cancer of the corpus, the initial sign was uterine bleeding in eleven cases, and this sign had been present for from three months to one year, an average duration of seven months before the patient consulted a physician. In one case, the initial sign was a leucorrhœa, which had been noticed for three months. In the last case, pain persisting for six months determined the woman to seek advice.

As you will observe, these patients were much too long aware, and careless of, these aberrances. The saddest part of the story is that, in fifteen cases, judging from the extent of the lesion, the condition was only pre-cancerous when the initial sign was disclosed. Pre-

cancerous only, and easily cured by appropriate treatment. Yes, these women were too long aware, and you can judge for yourselves the increased jeopardy due to their mistaken modesty, their ignorance, or neglect.

This then, represents our cancer prophylaxis, both in a general and special way. We are to reform our ways of living, to keep ourselves clean, within and without, to subdue or remove the chronic irritation, and to be ever on the watch against this menace. To-day, and probably to-morrow, the only adequate treatment for this dread disease is, to prevent it.

Already much has been done by our profession, and our work has been endowed by large and generous donations. Cancer hospitals have been built, and everywhere there exist societies for the control of cancer and for cancer research. Many of our medical societies have special cancer committees; there is the so-called "Cancer Week," and our literature is replete with the subject.

There still remains the urgent problem of cancer education, and you will agree that there is danger here, unless this "education" be only sane and temperate. It is true that the laity must be shown the way of its salvation, by special meetings perhaps, and by inspired articles in the public press. But there is great need of caution and restraint, and no need at

all for flaming head-lines such as these: "Cancer Reaps a Huge Harvest, Toll Growing." These head-lines are taken from a daily paper, September 24th, 1924. Such a sensational appeal merely serves to start a panic, to create a cancer-phobia, where the remedy may be even worse than the disease.

As I have said, there is already an abundant literature of all shapes and sizes, and our lay brethren have been of great assistance. The last, and easily the best, addition to this lay-literature is a book, *Cancer; How it is Caused, and how it can be Prevented*, from the pen of J. Ellis Barker, a well-known English writer. Sir Arbuthnot Lane writes the Introduction, and pronounces the book, "the most practical work on cancer existing in English or in any other language."

I confess that I have no great faith in mass education, though I certainly believe in education for the masses. I feel strongly that all true education must be attained in a careful, an individual, and a specific way. I am firmly convinced that this special education, this cancer education, must remain for the greater part in the hands of the medical and nursing professions.

Cancer is a great and a growing emergency; our duty is plain and imperative, for here ignorance is not bliss and it is not folly to be wise.

Focal Infection in Peptic Ulcer.—The case histories of three patients, with animal protocols in which the peptic lesion was seemingly due to dental infection, and three in which the tonsils were the source of the infection, are reported by Russell L. Haden and Peter T. Bohan, Kansas City, Kan. Experimental proof of a causal relationship of chronic foci of infection to an existent peptic ulcer was obtained by the injection into animals of bacteria recovered from the focus. In twelve patients, dental infection was probably the primary cause. Forty-five rabbits were injected with cultures from dental foci in three patients; 53 per cent of the animals showed peptic lesions at necropsy. Only 7 per cent of 535 control

animals similarly injected had such lesions. Eleven rabbits were injected with cultures from the tonsils of five patients. Ten showed at necropsy lesions of the stomach or duodenum. The duodenal lesions observed experimentally are limited to the duodenal bulb, just as they are in man. The gastric lesions have a similar anatomic distribution. The evidence presented is good proof of the infectious theory of peptic ulcer. The authors urge that patients with peptic ulcer should be thoroughly studied from standpoint of chronic infection, and all possible foci removed. Gastroduodenal malfunction without demonstrable focal lesions may likewise be a manifestation of focal infection.—*Jour. Am. Med. Ass.*, Feb. 7, 1925.

PERIARTERITIS NODOSA A REVIEW OF OUR KNOWLEDGE

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Synonyms.—Polyarteritis nodosa: periarteritis nodosa et aneurysma thrombotica.

Definition.—“An inflammatory lesion of the smaller arteries beginning in the outer coats, with hyaline degeneration of the media and formation of secondary aneurysms with thrombosis and rupture.” (Osler).

Historical.—While Rokitansky in 1852 reported the first case, the credit of establishing periarteritis nodosa as a definite pathological entity undoubtedly belongs to Kussmaul and Maier, whose paper of 1866 is still the classic on this rare disease. The subsequent important papers, are in my opinion, those of Dickson (1908), Lamb (1914), Klotz (1917), Harris and Friedrichs (1922), and Ophüls (1923).

Etiology.—(1) Incidence. If we are to judge by the number of cases in the medical literature of the world, periarteritis nodosa is one of the rarities of the post mortem room as there are but eighty-three cases reported to date. (2) Zoological and geographical distribution. The disease is not confined to man, as it has been described in the deer (Lüpke and Jaeger), the pig (Joest) and the calf (Guldner). It has been reported chiefly from Germany and America, but also from Austria, Hungary, Great Britain, Roumania, Switzerland, and Australia. (3) Sex and age. It is a disease chiefly of the male sex and of the third and fourth decades of life, as the ratio of the male to female cases is five to one, and the average age is thirty-one years. However, some twelve or fourteen women have been affected, while a child of two and a half years and a woman of seventy-three years have been victims of the disease. (4) Exciting cause. While syphilis was suggested as the exciting cause when the condition was first described, and even more recently by Versé, most authorities state emphatically that the rarity of a history of syphilis in the protocols, the negative Wassermann reaction in the majority, the absence of the spirochæta pallida in the tissues

post mortem, and the gross and microscopic anatomy of all the cases reported, exclude syphilis as even a predisposing factor.

Various bacteria, as the streptococcus and staphylococcus, have been occasionally found in some of the lesions, but blood cultures both *intra vitam* and *post mortem*, have been sterile as a rule. In spite of these negative findings Klotz still suggests the possible rôle of the streptococcus though Ophüls would relegate it to the “secondary invader” class. Ophüls suggests the close relationship of periarteritis nodosa to the rheumatic processes, as evidenced by a definite history of a recent attack of rheumatism or an onset with acute tonsillitis. Further, the course of a slow mildly septic disease with various cutaneous manifestations as erythema multiforme et nodosum, purpura, urticaria, and the occasional occurrence (five cases) of endocarditis are suggestive links. Lastly the similarity of the rheumatic nodule to the small granulomatous lesion of periarteritis nodosa has been pointed out by Aschoff.

As one might expect a filterable virus has been suggested by the recent students of the disease, as von Hann, Harris, and Friedrichs. The two last named report the successful transmission of the disease to three generations of rabbits by the intra-peritoneal injection of a Berkfeld filtrate of the emulsified tissues. As other writers, (Carling and Hicks, and Ophüls, etc.) report failures in their transmission experiments, it must be admitted that the case for the filterable virus is still “not proven.”

Yet most authorities, with the notable exception of Spiro, are agreed that periarteritis nodosa is a specific infection *sui generis*, as suggested by the following facts. First that a similar pathological entity occurs in epidemic form in stags; secondly that successful transmission experiments have been reported by Lamb, as well as by von Hann, Harris, and Friedrichs.

Pathology.—The rarity of the disease, even in the dead-house, is illustrated by the fact that Klotz, a well known student of arterial disease, performed over 3,000 post mortems before meeting with his first case. The arteries most commonly involved are the smaller branches of the celiac axis, (the gastric and the splenic), the superior mesenteric, the renal and the coronary arteries of the heart; more rarely the medium sized arteries of the skin, the lung, the brain, the epididymis, the adrenal, and the liver.

The venules may also be involved according to von Hann and one or two of the earlier writers as Beitzke, who noted involvement of the medium sized branches of the portal vein.

The pathological findings are aptly subdivided by Harris and Friedrichs into three groups; (1) The injury to the vessel wall; (2) the results of the wall injury, and (3) the injury of the tissue or organs. The injury to the vessel wall is represented by exudative and degenerative processes of a more or less acute inflammatory type. It probably starts in the periadventitial tissue and adventitia, but soon involves all coats of the arterial wall; this exudate is made up largely of small round cells, but is rich in polymorphnuclear neutrophiles, eosinophiles, and fibrin. The media shows cloudy swelling and undergoes necrosis; the intima is occasionally involved. As a result of this wall injury, the elastic tissue of the media ruptures and both true and false aneurysms occur, with the subsequent development of haemorrhagic extravasations. As a further result, there is cellular proliferation and thickening of the intima with occlusion of the lumen, thrombus formation and infarction. The affected arteries may present a series of nodular tumours, numbering from ten to two or three hundred; on a cross-section they look not unlike a series of small "peas in a pod," but varying in size from several millimeters to microscopic dimensions.

The injury to the tissue or organs is represented by various retrograde changes, "attributable to the curtailment of blood supply by the thrombosis" or "to pressure injury from the haemorrhagic extravasation." Cloudy swelling, fatty degeneration, coagulation necrosis, ulceration or other forms of cell destruction are observed, hence the hemiplegia, the myocarditis, the nephritis, ulcerative enteritis,

etc. which are so frequently found *post mortem*. The serous and mucous membranes may be involved in the process.

Pathogenesis.—The distribution of the lesion is by way of the peri-arterial lymphatics, according to Klotz. The process is an inflammatory one, beginning in the outer portion of the artery, accompanied by a hyaline degeneration of the media; the intima is only secondarily involved. This conception receives the support of Klotz as well as of the majority of the earlier students of the disease as Kussmaul and Maier, Freund, P. Müller, Veszprémi and Janseó, Graf, etc. It is, however, only fair to state that subsequent writers as Chvostek, Weichselbaum, Fletcher, and von Kahlden considered the process to be primary in the intima, while others again, as Ferrari and later Shapiro, believed that the media is first affected and from it the inflammatory process extends rapidly into the adventitia and intima.

Symptomatology.—The onset of the disease is often acute and may be preceded by an attack of acute tonsillitis. In some cases the onset is insidious. The symptoms are "protean in character" as one would expect from the distribution of the various lesions. The symptoms common to all cases are those of any severe infection; weakness, anorexia, sweating, general malaise, and fever appear with great constancy in the history of these patients. The fever is usually irregular with a daily rise to 101°; only rarely have temperatures of 104° and 105° been recorded. The pulse rate is usually increased out of all proportion to the fever. Leucocytosis is another constant symptom and varies from 11,000 to 30,000 white cells per cmm. The differential count reveals invariably an increase in the percentage of the neutrophiles; more rarely of the eosinophiles.

Various vasomotor skin eruptions have been noted as erythema and urticaria; even purpura is not an unfrequent symptom. Some patients have vague abdominal discomfort at the onset, and later develop severe pain, nausea, vomiting, and local tenderness; several cases have been explored for a "surgical abdomen." In others diarrhoea of a more or less persistent type, or diarrhoea alternating with periods of constipation, has been noted. If there is an ulceration of the gastric or intestinal mucosa, haematemesis or melæna will of course be ob-

served. Quite a number of patients develop albuminuria, haematuria, and cylindruria, and the clinical picture of an acute nephritis. Sometimes these symptoms subside, while in a few they persist, and a diffuse or focal nephritis is found at autopsy.

When the coronary arteries are affected, the picture is one of myocardial insufficiency, rarely in association with anginoid pain. When the peripheral arteries are involved, the main symptoms are painful muscle cramps, wasting of the muscles, painful joints, and very occasionally, palpable nodules in the subcutaneous arteries.

Sometimes the arterioles supplying the peripheral nerves are involved, when there appears the picture of a peripheral neuritis, viz. pain, formication, anaesthesia, paresis, and paralysis of the muscles of the extremities. If the cerebral circulation be attacked, the picture of meningitis, encephalitis, neoplasm, haemorrhage, or thrombosis results, with headache, vomiting, convulsions, hemiplegia, or local palsies as the presenting symptoms. The pulmonary arteries have been occasionally involved, when cough and haemoptysis, rarely asthma-like paroxysms result.

The course is usually rapid and varies from a few days in the fulminant cases to a few weeks in the majority. Occasional protracted cases have occurred, even an illness of two years being recorded. Two or three of the accepted cases in the literature have apparently recovered completely and were only re-

cognized subsequently by a histological study of the tissues. Klotz believes that recovery may be the rule in the milder cases.

Diagnosis.—This is of course beset with difficulties, as shown by the fact that a clinical diagnosis was made, but four times up to the year 1917. However, it would seem likely that with an increasing knowledge of the disease, the diagnosis will be more often entertained in obscure cases of sepsis. It should of course be made when the subcutaneous nodules are palpable along the course of the peripheral arteries as was true of some eight cases; a portion of the affected arterioles can then be removed for a histological study. Further laparotomy or exploration of a tumour of the muscles has on two occasions provided material for an *intra vitam* histological diagnosis. Of course, in many cases it may be impossible to make a clinical diagnosis, and even at post mortem some cases have no doubt been overlooked. Several times the characteristic arterial lesions have only been discovered after a painstaking histological study.

Treatment.—This is of course purely symptomatic, and consists largely of supporting the patient's strength and making him comfortable. This means bed, rest, and nourishing and digestible diet, iron and arsenic for the anaemia, blood transfusions and normal saline intravenously for the toxæmia. Until the etiological factor is discovered a more specific therapy cannot be outlined.

Meeting of Cancer Committee.—The Cancer Committee some time ago held a jubilee meeting together with the Berlin Medical Society. The meeting was honoured by the presence of the late President of the German Republic—his last attendance at a public meeting before his fatal illness. Lectures were delivered by Prof. Warburg on the metabolism of the cancer cell, and by Prof. Lubarsch on the history of cancer research during the past twenty-five years. Prof. Blumenthal, head of the cancer department of the Charité Hospital, spoke on the treatment of cancer by modern methods, mentioning that, apart from Roentgen rays and of

radium, injections of thorium had proved successful. He suggested that he had been able to cultivate bacteria from cancer in human subjects. In sixteen cases three different species of bacteria were found which on inoculation into animals produced new growths, which could be re-inoculated in animals of the same species and become ulcerous like cancer. To develop the growth, however, not only inoculation of the bacteria, but also addition of an irritant was necessary, infusorial earth having been chosen for that purpose.—Excerpt from Berlin letter, *Lancet*, April 4, 1925.

THE PROBLEM OF THE FUNDAMENTAL ACTION OF INSULIN

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BESIDES the better known objective symptoms of diabetes, hyperglycæmia, glycosuria, and ketonuria, there are two others of very great importance from the physiological standpoint. These are, the disappearance of glycogen from the liver and the failure of the respiratory quotient ($R.Q. \frac{CO_2}{O_2}$) to become

raised when carbohydrates are fed. In a normal animal, for example, much glycogen becomes deposited in the liver and the respiratory quotient promptly rises following the administration of glucose whereas after complete removal of the pancreas the liver remains practically free of glycogen and no change occurs in $R.Q.$ following the ingestion of sugar. These results indicate that the deposition of glycogen and the oxidation of glucose in the animal body must be intimately associated, if not interdependent, processes, and it is believed that the pancreas exercises control over them because of the production of an internal secretion. When insulin became available it was possible to offer strong evidence in support of this hypothesis by finding that its administration to a depancreatized animal, along with sugar, was followed by a marked deposition of glycogen in the liver and a decided rise in $R.Q.$ (Banting, Best, Collip and Macleod). This seemed to indicate that the diminution of sugar in the blood, as well as its disappearance from the urine in diabetic animals, must be due in part to its being converted into glycogen and in part to its being oxidized.

When it was discovered that insulin also lowers the blood sugar in normal animals it was natural to suppose that the same two processes must be accountable for the effect and we were greatly surprised to find, not only that the liver and muscles of animals injected with insulin contained less, if anything, than the normal percentage of glycogen (McCormick and Noble) but that the respiratory quotient rose only slightly following its administration even when large amounts of sugar were given at the

same time as the insulin (Eadie, Dickson, Macleod and Pember).

These results seem to indicate that insulin does not act in exactly the same manner in diabetic as in normal animals. This difference may depend on the fact that when insulin is given to a diabetic animal it replaces a factor that is essential in the metabolism of the animal, whereas in a normal one, it really acts as a toxic substance, because it adds to the normal quota of insulin an excess that is not needed. It is almost certain that in both the normal and the diabetic condition the initial effect of insulin is not on the glycogenic or the oxidative mechanisms but on some stage in carbohydrate metabolism that is preliminary to both of them. If this be so, there may be no fundamental difference between normal and diabetic animals. Various attempts have been made to discover the nature of this initial effect. Some investigators have thought that insulin converts glucose into a highly reactive form, such as the recently discovered *gamma* glucose, and, that a change of this nature may occur, has been supported recently by dialysis experiments on blood. But it does not seem likely that this is the essential process in insulin action, for it cannot explain why so much sugar may disappear as, for example, in the case when insulin and sugar are injected together. It can at best be only a preliminary step and some other substance must be formed out of the disappearing glucose.

One of the most important problems in connection with the physiological action of insulin is, therefore, the identification of this unknown substance, but it is a problem which we cannot hope to solve until we know the *locus* in the body in which the substance is formed. There can be no doubt that this is mainly, if not exclusively, in the muscles. The first evidence of this was furnished by Hepburn and Latchford who found, in observations on the perfused mammalian heart, that the addition of insulin greatly accelerates the rate at which sugar dis-

appears from the perfusion fluid. Mann and Magath then showed that the blood sugar falls at the same rate, as a result of insulin, in dogs from which the liver has been removed as in normal dogs. More recently Burn and Dale have shown that insulin also increases strikingly the rate at which sugar disappears from the blood in decerebrated and eviscerated cats, and Cori and Cori have been able to demonstrate that the difference which normally exists between the percentages of glucose in samples of blood taken simultaneously from the femoral artery and vein becomes distinctly greater following the injection of insulin. These experiments do not show that the muscles are the exclusive storehouses for the disappearing sugar, for it is possible that the liver may also store some, but they indicate that chemical examination of the muscles might be expected to result in revealing the chemical nature of the unknown substance into which it disappears.

In deciding upon the chemical procedures to be followed in searching for this unknown substance the further fact has to be borne in mind, namely, that insulin causes the percentage of inorganic phosphates of the blood to decline at the same time as the sugar, with the consequence that the phosphates practically disappear from the urine (Wigglesworth, Woodrow, Winter and Smith; Allan and Sokhey, and others). But we have found that the phosphates and the sugar do not run parallel in their behaviour, for the fall in blood phosphates does not last nearly so long as that of blood sugar and, accompanying, or shortly following, the onset of the recovery in blood phosphates those of the urine reappear in great excess of the normal quantities. Furthermore, when sugar is given along with insulin the urinary nitrogen is scarcely affected whereas when insulin is given alone (to a starving animal) a decided increase in nitrogen occurs at the same time as the urinary phosphates are disappearing (Sokhey and Allan). These facts would seem to indicate that some compound becomes formed between the sugar which disappears and phosphoric acid; some hexose phosphate, perhaps, such as Harden and Young have demonstrated is formed as an intermediate product in the break-down of sugar by yeast.

In the investigations which have recently been completed in this laboratory, in collabor-

ation with G. S. Eadie and E. C. Noble, insulin was injected into rabbits along with equivalent quantities of sugar, and after several hours the animals were killed by stunning and portions of the muscles of the hind limbs, and of the liver, immediately frozen by means of liquid air. The frozen tissue was then pulverized in an iron mortar and extracted with alcohol at a concentration of about seventy per cent. In some of the experiments this was done at boiling temperature and in others at about the freezing point of water. Extraction was repeated several times, separation of the extracts being effected usually by centrifuging. The alcohol was removed from the extracts at low temperature in an air current, and the residue divided into two portions in one of which the amount of sugar was directly measured (for free sugar) and, in the other, after hydrolysis (for combined sugar). Parallel observations were always made, using rabbits which had not been injected. There is some evidence from the results that insulin causes the free, as well as the combined (hydrolysable) sugar, that is soluble in warm dilute alcohol, to become reduced both in the muscles and the liver. On the other hand, when the extraction is made at low temperatures a moderate increase in both forms of sugar was found in the liver and muscles of animals injected with insulin and sugar. In certain of these cases the percentage in the tissue was somewhat greater than in the blood, and in two of the observations on the liver the increase in hydrolysable carbohydrate was very marked indeed. The results were, however, not sufficiently constant to make it permissible to draw any very definite conclusions. They are merely suggestive. It is possible that some highly labile substance is formed from which sugar can be derived by hydrolysis but it seems more probable that most of the sugar which disappears becomes changed into a substance or group of substances having no reducing properties either before or after hydrolysis. One immediately thinks of the possibility that lactic acid may be this substance, but there is no evidence to support such a view. That lactic acid does not appear in the blood as a result of the action of insulin, as it was thought to do by Doisy, etc., has been shown both in this laboratory and in the Connaught laboratories, by Best and Scott.

The disappearing sugar is, therefore, not converted into glycogen, or any other carbohydrate capable of being hydrolysed into sugar, neither is it converted into lactic acid and as we saw in the introduction, no considerable proportion of it is burnt up. What does it form? Is it one substance or a series of substances? These are the problems awaiting solution at the present time.

There remains to consider the rôle of the phosphoric acid which disappears from the blood at an early stage in the action of insulin. Some have suggested that it unites with decomposition products of sugar to form the compound, called by Embden and his collaborators, *lactacidogen*. This substance has never really been isolated but its presence in muscle under certain conditions has been inferred from the fact that when recently excised muscle is kept at body temperature for some time the amounts of soluble phosphates and of lactic acid increase

in equivalent quantities indicating that they must have existed as some compound in the muscle. To test the possibility that lactacidogen is formed as a result of the injection of insulin we took a portion of the frozen muscle in each of the experiments and determined the extractable phosphates before and after incubation, but without finding that there was any difference in the extent to which the soluble phosphates increased in insulin-treated, as compared with normal rabbits. So far as available evidence goes, therefore, we have no clue as to what becomes of the sugar which disappears in such large amounts following the injection of insulin. This is the most interesting problem awaiting solution in connection with the action of insulin and its solution will undoubtedly lead far to an understanding of many, at present obscure, processes of metabolism.

Treatment of Tetanus.—C. Smith and W. E. Leighton (*Amer. Journ. Med. Sci.*, December, 1924, p. 852) discuss the treatment of tetanus, with special reference to the use of magnesium sulphate. Administered in a sterilized 25 per cent solution either subcutaneously, intramuscularly, intraspinally, or in a 6 per cent solution intravenously, its action is sedative, controlling the spasms, and preventing death from exhaustion or asphyxia, thus assisting the patient to eliminate the toxin. The only serious danger reported is the possibility of respiratory paralysis, but such an effect can be relieved by calcium chloride, which neutralizes this respiratory action. A 2.5 per cent solution of neutral calcium chloride in normal saline given slowly intravenously in severe cases usually restores the spasms within thirty seconds, but in less severe conditions 10 to 15 c.c.m. of a 2.5 per cent solution given intramuscularly more gradually neutralizes the unfavourable effect without causing a recurrence of the tetanic spasms. As a routine method prophylactic antitoxin subcutaneously is advised in all suspicious cases. During a tetanic attack it should be given intravenously, or intraspinally in

severe cases, the spasms being controlled by the subcutaneous injection of magnesium sulphate, with recourse to the intraspinal or intravenous route if urgent symptoms arise, and the addition of morphine injections if necessary. The infected wound should be opened and treated with tincture of iodine, serum being injected locally. Fluids, nourishment, and careful nursing are essential, and an intramuscular or subcutaneous injection of serum should be given on the eighth or ninth day to maintain prophylaxis. The two authors contribute details of several cases in which this treatment was employed, and a bibliography of fifty-nine references is appended.—*Brit. Med. Jour.*, Feb., 1925.

The fall in the number of medical students in Germany is shown by the following figures given in the *Deutsche medizinische Wochenschrift*. In the winter term 1922-3 there was a total of 13,489 students, of whom 1,736 were women, and 2,204 foreigners, of whom 336 were women; while in the summer term of 1924 there was a total of only 9,316 students, of whom 1,373 were women, and 1,962 foreigners, of whom 280 were women.

COLLES' FRACTURE

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SOME apology may be necessary for bringing to your notice such an ordinary commonplace lesion as a Colles' fracture. Each of us must have seen a very large number of them; surely all that is to be said on this subject has been said many times over. And yet the disconcerting fact remains, that however thoroughly we recognize the condition, the results of treatment are far from satisfactory in a high proportion of cases. One might go so far as to say that a perfect result is the exception rather than the rule. In the female, a bad result is undesirable from the cosmetic as well as the functional standpoint. In the male a bad result means a bad functional result. This involves prolonged convalescence, permanent impairment, and serious economic loss.

For practical purposes, we may take Colles' fracture to include fractures of the lower end of the radius. Fractures in this locality have been classified endlessly. I do not propose to deal with this side of the question. Let us refer to the original description given by Colles in the *Edinburgh Medical and Surgical Journal*, 1814.

"This fracture takes place at about an inch and a half above the carpal extremity of the radius, and exhibits the following appearances.

The posterior surface of the limb presents a considerable deformity, for a depression is seen in the forearm about an inch and a half above the end of this bone while a considerable swelling occupies the wrist and metacarpus. Indeed the carpus and base of metacarpus appear to be thrown backward so much as on first view to excite a suspicion that the carpus has been dislocated forwards.

"On viewing the anterior surface of the limb, we observe a considerable fulness as if caused by the flexor tendons being thrown forwards. This fulness extends upwards to about one third the length of the forearm, and terminates below at the upper edge of the annular ligament

of the wrist. The extremity of the ulna is seen projecting towards the palm and inner edge of the limb; the degree, however, in which this projection takes place is different in different instances.

If the surgeon proceed to investigate the nature of this injury, he will find that the end of the ulna admits of being readily moved backwards and forwards.....

The nature of this injury once ascertained, it will be a very easy matter to explain the different phenomena attendant on it..... The hard swelling which appears on the back of the hand is caused by the carpal surface of the radius being directed slightly backwards, instead of looking directly downwards. The carpus and metacarpus retaining their connections with this bone must follow it in its derangements, and cause the convexity above alluded to..... The broken extremity of the radius being thus drawn backwards, causes the ulna to appear prominent towards the palmar surface, while it is possibly thrown more towards the inner or ulnar side of the wrist by the upper end of the fragment of the radius pressing it in that direction....."

Since the advent of x-rays our knowledge of the actual pathology has become somewhat more precise, although the essentials were fully described over 100 years ago. We are accustomed to think of the displacement as being typically three-fold. The lower fragment shows dorsal displacement, dorsal rotation and radial deviation. By means of a radiograph in two planes at right angles these three can be recognized and their degree estimated. Where dorsal rotation exists without much dorsal displacement, the simplest method of recognizing this is by inspection of the proximal curve of the semilunar bone, to which the corresponding articular surface of the radius is parallel. These in the normal state face not directly dis-

tal but have a definite volar inclination the angle being estimated at ten degrees to twenty degrees.

The radial deviation is most readily noted by comparing the level of the styloid process of the radius with that of the ulna. This is readily done in the living subject, and is still more obvious in the radiograph.

Very frequently the x-ray reveals separation of the styloid process of the ulna, the displacement being always towards the radial side. The cause of the fracture of the ulnar styloid is not always clear. Thus in a recent article we read, "The break of the ulnar styloid is simply a shearing fracture. The break in the radius lets the ulna down so that the styloid meets resistance and is sheared off." With this opinion we cannot agree. In another article we are told, "This fracture may involve the radius only, but in a large majority of Colles' fractures the styloid process of the ulna is torn loose from the shaft by the pull on it through the lateral ligament to which it is attached. Where this happens, the Colles' fracture is much more serious than where it does not take place."

This is true but not "the whole truth and nothing but the truth." Let us glance for a moment at the normal anatomy of the styloid process of the ulna. At its base there is a pit to which is attached the apex of the triangular fibro-cartilage which forms the main bond of union between the lower end of the two forearm bones. To the tip of the styloid process is attached the ulnar collateral ligament of the wrist joint passing distally to the euneiform, i.e. the proximal row of carpal bones. The styloid process of the ulna has thus two anchors, a transverse one, and a longitudinal one. Now when a deforming force is applied to the hand, a strain is put upon one or other of those anchors and as usually happens the bone itself gives way sooner than the ligament does. The styloid process of the ulna thus undergoes a traction fracture, the tip alone being torn off when the strain is transmitted through the ulnar collateral ligament, the greater part of the styloid process being wrenched off when the strain comes through the triangular fibro-cartilage. In either case as Colles noted there is excessive mobility of the head of the ulna, but the two conditions

are not equally serious. The one involves an ulno-carpal luxation, a comparatively minor disability, for the radio-ulnar joint is the main connecting link between carpus and forearm. The other involves a radio-ulnar luxation, a disability which manifests itself in every movement of pronation and supination.

We are thus led to the conclusion that while fracture of the ulnar styloid is always a distinct disadvantage, it is not always so to the same degree. It may be possible to distinguish between the two varieties by noting the amount of mobility of the ulnar head.

Colles noted in his original description the fact that "if the surgeon attempts to move the broken pieces of bone in opposite directions, although the patient is by this examination subjected to considerable pain, yet neither crepitus nor a yielding of the bone at the seat of fracture nor any other positive evidence of the existence of such an injury, is thereby obtained." This feature of Colles' fracture is usually described as "impaction." In treating a Colles' fracture, should one break up the impaction? Always. Many cases where this is not done will obtain in the course of time a satisfactory functional result, but if a *restitutio ad integrum* is aimed at, disimpaction must be performed. What method of reduction of the fracture should we employ? Here is a graphic sentence from a recent paper. "A surgeon who thinks he can take hold of the hand of the patient with the 'shake-hand' method and reduce a Colles' fracture is doomed to failure and chagrin. On confirming his reduction by x-ray he will have remorse of conscience on finding that he did not change the position at all."

In many cases a general anaesthetic is absolutely necessary and we never have the right to withhold it. The force necessary to bring about reduction may be considerable. "There is considerable danger of under-correction, and very little risk of over-correction." The actual technique of reduction is a matter of individual preference. One writer says, "There has been no improvement in the old method of reduction of a Colles' fracture, hyperextension of the hand, local pressure downward on the distal fragment, strong flexion and stronger adduction with local pressure."

An increasing number of surgeons make use of Robert Jones' method. This has the advantage of being applied directly at the seat of fracture not by "traction and manipulation through a chain of small bones like the metacarpus and carpus through their ligaments." The grip is thus described by Jones:

"To reduce a left Colles' fracture, the surgeon takes the patient's arm in his left hand with his own scaphoid tubercle against the projecting lower end of the shaft; he then places his right hand on the dorsum of the patient's wrist with his own scaphoid on the projecting lower fragment. A firm grip with a slight traction and twist of the wrist completely reduces the deformity. It requires knack rather than strength."

What test have we for completeness of reduction? If the hand can be fully flexed at the wrist, the displacement has been completely overcome. How is reduction to be maintained? Here again individual preference often decides. Jones uses light flexible splints of sheet metal, the wrist being kept pronated. Many use plaster of Paris, and this if well applied is a useful form of splint. It enables the surgeon to mould the splint to the individual wrist with a tolerable degree of accuracy. In what position should the hand be placed? The hand should be flexed at the wrist joint, and deviated to the ulnar side. If reduction be complete, the position is not very irksome, and in cases in which the ulnar styloid has been torn off the parts are placed in the closest proximity. There is no harm in leaving the plaster untouched for a week. It ought to be so applied that the thumb and the fingers are free, including the metacarpophalangeal range of joints. After a week the plaster should be split into two halves, and massage and active exercise should be carried out daily. All splints should be discarded after three weeks.

We have said that a large number of the re-

sults of treatment of Colles' fracture are unsatisfactory. The great majority of these are due to imperfect reduction. Some, however, are due to excessive compression by retaining splints or plaster. In elderly people especially, too much care cannot be exercised to see that the movements of the fingers are free. Otherwise, the tendons become cemented in their sheaths by serous effusion or actual haemorrhage, and many months of painful treatment are likely to elapse before the hand regains its usefulness.

When disability is associated with imperfect replacement of fragments, the displacement for practical purposes may be looked at from two points of view:—(a) dorsal rotation; (b) radial deviation.

To overcome the radial deviation in an old standing case, there is no really satisfactory method. Fortunately, radial deviation in itself does not usually cause so much disability as does dorsal rotation. The latter displacement is fortunately always susceptible of correction. If the injury be of not more than a week's standing, it can usually be corrected manually. From one to three weeks afterwards, and in some cases later, it may be corrected by the use of a wrench. At a later date, it is generally necessary to perform an osteotomy of the lower end of the radius. In women where it is desirable to avoid a scar, it is sometimes possible by drilling holes in various lines, to weaken the bone sufficiently to enable one to complete the fracture by means of the wrench.

Summary

- 1.—Colles' fracture is a source of much economic loss.
- 2.—It is sometimes combined with inferior radio-ulnar luxation.
- 3.—It is of primary importance to secure complete reduction.
- 4.—In the elderly, especial care is necessary to retain free movements of the fingers.

Signs Along the Road.—Below a chassis placed on a pole, appear the words "He tried to beat our fastest train. Don't you try it."

"Don't mix booze with your gas going through this town."

"To let, fine graveyard, two blocks north."

"We don't need speed traps. We have plenty of sharp turns in this town. Try them if you will but don't muss up the scenery."

A BRIEF REVIEW OF FORTY-FIVE CASES OF ANTERIOR POLIOMYELITIS

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RECENTLY we have been unfortunate in having an epidemic of infantile paralysis that has exhibited a high mortality rate, and among the cases there has been a sufficient diversity of symptoms to warrant one in considering them and the conditions with which they might be confused. In the district surrounding Estevan and Bromhead there have been forty-five cases and of these nine have died, a mortality of twenty per cent. I am indebted to Dr. J. Brown of Bromhead for notes on his cases.

Cases occurring during an epidemic of the disease one would think should offer no diagnostic difficulties, but as happened in this series cases may occur in which a great deal of doubt as to the correct diagnosis may persist for some time.

The first case of the series occurring in Estevan was a boy aged seven. He had previously been healthy. For several days he had been complaining of pains in his abdomen but he had never ceased playing about, and little notice was taken of his complaints. During the night he awoke and his mother noticed that he was short of breath. I was called at 8 a.m.

The boy was sitting up in bed. His lips were blue and his inspirations forced. His pulse was very rapid and small. Every few seconds he would lean over and expectorate large mouthfuls of clear sputum. Temperature was 100°. There was no complaint of pain. The amount of sputum increased until it fairly seemed to flow. Both lungs were full of bubbling râles to above the clavicles. The breathing gradually became more difficult and the blueness of the lips and face more marked and after a three-hour struggle for breath death ended his agonies.

Another boy of the same age exhibited almost identical symptoms. He complained of some slight headache and backache during the afternoon and vomited two or three times. About seven in the evening he noticed some

difficulty in swallowing and this was quickly followed by respiratory embarrassment. At nine o'clock there was inability to swallow and great difficulty in inspiration. His chest quickly filled up, there was copious expectoration for a period of two hours and by midnight he was dead.

The ascending type of paralysis was seen in two of Dr. Brown's fatal cases and in one whom I attended. A girl of thirteen of remarkably healthy appearance complained of a slight headache in the afternoon and the following day she developed a paralysis of the left leg. During that afternoon she felt quite comfortable and amused herself with the comic section of a newspaper. Towards evening she began to have difficulty with her breathing and this rapidly increased. Just before midnight she died.

A boy aged four complained of headache during the afternoon. The following day he appeared drowsy, and as he was usually very active this led the parents to seek advice. No fresh symptoms made their appearance, and after thirty-six hours, during which his pulse gradually became faster and his breathing more shallow, he died. The knee jerks were absent for some hours.

A boy aged five. When first seen he had a temperature of over 100°, but there were no findings beyond this. He was very irritable, and would forcibly resist any attempts at examination. As he was usually an agreeable little fellow this attitude seemed to portend something of a serious nature. This condition of irritability with an unexplained temperature lasted three days. His throat then commenced to fill up with a watery mucus and there was frequent expectoration. This lasted for several hours and then commenced a difficulty in breathing and on examination of the chest it was found that râles had made their appearance in plenty. The difficulty in breathing

gradually became more marked and he died in twenty-four hours after the onset of difficult inspiration.

Dr. Brown had a case that developed in the same manner as the last one mentioned. Twenty-four hours after chest symptoms developed they commenced to clear up but a paralysis of the left arm developed. Within three or four days nothing beyond the paralysis of the arm remained.

Another of the fatal cases occurring in the Bromhead district showed ptosis of the left eye, dilatation of the pupil, opisthotonus, and a Babinski sign on the right side.

Two other fatal cases of which I have few notes died with a terminal œdema of the lungs.

Ten of the forty-five cases did not develop any paralysis. These cases with four exceptions were seen after a positive diagnosis had been made in other members of the same family. They all complained of headache and pain in the back and several of them had vomiting. On one of these cases there was a check made by examination of the spinal fluid, which simulated that of a tuberculous meningitis in that it was clear and showed a great increase in cells, mostly lymphocytes.

The cases that showed no paralysis were the dangerous ones in spreading the infection. With poliomyelitis, even in the epidemic type there is often great difficulty in tracing the source of the infection. These ten cases, after a week or two of headache and backache with a temperature gradually cleared up.

H. K., a girl of six, was a notable example of the meningeal type. On first sight one would think this girl was suffering from a meningitis. She lay with her back in the position of lordosis, knees drawn up and any attempt at examination would cause her to protest vigorously. Her head, however, could be rolled from side to side without causing her any pain, and if the knee were supported the thigh could be moved in any position. She was a delicate little child and had been sickly for some months. The parents objected to a lumbar puncture being done. After a week the condition changed and there was evidence of paralysis in that she could not flex the left knee.

A little girl aged two was seen with a right facial paralysis. Her mother stated that the week previous she had been fretful and had

complained of pains in her head and stomach. For two days previous to my seeing her she had been apparently well but the day before my visit the parents had noticed that her face looked peculiar and that one side of her mouth was drawn up when she cried. Otherwise the child was perfectly normal. What a wrong prognosis could have been given had not the history been carefully enquired into.

Two cases resembled in their onset an ordinary acute bronchitis, and developed paralysis in the course of three or four days.

In only one case was there any possibility of mistaking the diagnosis because of misleading abdominal symptoms. A little girl aged five had been sick one day and she indicated that her abdomen was sore. Vomiting had been severe some hours before I saw her. Temperature and pulse were elevated. On feeling the abdomen there was a decided rigidity over the whole right side. No evidence of paralysis was apparent. As there was constantly in one's mind the possibility of the complaint being an irregular prodrome of paralysis, a leucocyte count was done. There was a count of 9,000. An enema helped relieve the pains and the rigidity lessened. That evening she complained of a headache and the following morning there was a well marked paralysis of both legs.

Encephalitis may resemble very closely the meningeal type of poliomyelitis, indeed it may be impossible to differentiate the two. The bulbar type of poliomyelitis occurred in this series in seven of the fatal cases, and in only one case in which bulbar symptoms were apparent, was there recovery. The gradually increasing difficulty in breathing, usually followed in a few hours with a terminal œdema, was sufficient cause to give a bad prognosis. The fact that there is usually some paralysis apparent shortly after the acute onset in poliomyelitis makes it, as a rule, easy to differentiate.

Acute rheumatism also may be confused with poliomyelitis. In both there is at first as a rule complaint of pain in the affected limbs. When a child suffering from rheumatism is asked to move the affected limb one frequently is told that he or she cannot do so. On gently picking the limb up there is a difference noted immediately. The paralyzed limb is flaccid, and the rheumatic one held rigidly so that movement of the joint affected is minimized.

Infantile scurvy also resembles it as in that disease there is a pseudo-paralysis that simulates it closely. The long period of onset and the history of faulty dieting should guide one from this error. Again infantile scurvy is a disease almost always seen during the first three years of life. The pseudo-paralysis clears up very rapidly by simply adding a little fruit juice to the diet. One would think that a lumbar puncture should very rarely be necessary to differentiate between these two conditions.

Various birth palsies also might lead to some confusion. There is, however, a fundamental difference. In the paralysis as seen after a birth injury, there is always spasticity present, and in an established paralysis due to anterior poliomyelitis the paralysis is always flaccid.

The youngest case seen was in a baby four months old who was attended by Dr. Brown, and the oldest was in a man of thirty-six who had a severe paralysis of one leg, moderate of the other leg, and slight of the right arm. There was also a married woman of twenty-five who after complaining of a severe headache and backache for three days developed a slight paralysis of the muscles of the right hand. All the other cases were under twenty-one with the greatest number between four and twelve years of age. The sexes were about evenly divided. Three cases occurred in families where there was one or more members of the family suffering from tuberculosis, one in a family of congenital syphilites, and one in a boy who had recently recovered from a severe whooping cough. The man of thirty-six who developed the disease had been doing two men's work for a period of six months. The others were apparently normal young people and up to the average health standards.

Two cases after the onset of paralysis developed retention of urine which necessitated catheterization for several days. Approximately half the cases suffered from severe constipation. This was very difficult to overcome and it was necessary to give enemata to relieve colic in several instances. A severe urticaria developed in two cases following the administration of Rosenow's serum. In one of these the tongue swelled to such an extent that it became alarming, and was partially controlled by the administration of adrenalin hypodermically.

The disease as shown by these cited cases may have a diversity of prodromal symptoms which as a rule group themselves into one of three groups, first, the group with headache and backache, secondly the group with bronchitis symptoms, and lastly those resembling an abdominal condition. All these cases complained of a slight sore throat that on examination looked merely reddened.

The ones seen early, for a short period showed a hyperesthesia of the limbs that became subsequently paralyzed; in one case a temporary increase in the reflexes was noted. After the diagnosis is established and the paralysis is first observed there may be progression for usually not more than a week at most, then for several weeks the paralysis remains at the same level, and finally begins to improve.

Tenderness as pointed out by Mackenzie Forbes may persist for six months. During the acute stage the profession seem to be agreed that there is no active treatment that is desirable and that the most important consideration is the prevention of deformities. There is, however, disagreement as to the length of time that constitutes the active stage. Mackenzie Forbes states that there may be evidence of inflammation around the nerve cells for a period of six months and insists on absolute rest for this period of time. Arthur T. Legg in charge of the Harvard Infantile Paralysis Commission is not so dogmatic. He states that as long as there is pain on movement of the affected limb there should be no active treatment and points out that this period may be different in individual cases. Urotropin in large doses is advised by some writers.

In this series all paralyzed lower limbs were placed in plaster casts or padded box splints, and arms were supported by wire splinting. Where there was any considerable degree of coldness in the limb, heat was applied. This may most easily be done by the use of electric lights under a blanket. In one case the pains in the limbs were of sufficient severity that morphine had to be given for several days. One half of my cases were given Rosenow's serum but I cannot say that there was any clinical amelioration of symptoms due to it. One instance will illustrate the difficulty in judging its efficacy. Two cases presented

themselves at the same time with almost identical prodromal symptoms, and the one that developed the paralysis was the one that had the injection of the serum. As soon as the temperature and pulse reached normal the casts were cut and the limb examined for tenderness, and in several instances there was a marked improvement noted when the cast was removed. When tenderness on handling and moving the limb disappeared massage was started for ten minutes twice daily. Any inability of the patient to make use of any group of muscles was immediately taken advantage of and a few minutes spent several times daily in attempting to

improve these movements. No form of electrical treatment has been used.

There is at times a certain difficulty with the parents not being able to see that this long period of inaction is necessary, and for this reason many patients of this class drift to various forms of treatment that may be considered unorthodox. As there is always some improvement the quack considers them "easy marks." There is though a certain amount of harm done in that the initial stage is prolonged if these manipulative treatments are commenced too early.

As to the end results with these patients it is too early to report.

X-RAY FINDINGS IN PRIMARY CARCINOMA OF THE LUNG*

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THE manifestations of pulmonary malignancy have been the subject of much discussion since Morgagni (A.D. 1682-1772) first described a case in a man of sixty years who suffered from cough with expectoration. The sputum occasionally blood tinged contained rather crude material; the subsequent post mortem revealed a solid right lung with areas of ulceration and the pleura and mediastinum showed extensive adhesions. This condition he called "Uleus Canerosum." Following Morgagni there arose considerable discussion and confusion between new growths and tuberculous consolidation until Laennec and certain English writers from careful clinical and pathological observation clarified the several conditions. The complete working out of a rational classification awaited the advent of Virchow (A.D. 1853).

Lung carcinoma can only arise from the three types of epithelium found in the lung, namely the columnar epithelium lining the bronchi and large bronchioles, the glandular epithelium lining the mucous glands, and the cubical epi-

thelium of the alveoli. According to Aschoff three types of pulmonary carcinoma are described. The first and most common are those which arise at the hilum either from the bronchial or mucous epithelium and extend by radiating along the lymphatics into the adjacent lung structure and beyond, commonly involving the pleura and giving rise to the fairly early appearance of fluid in the pleural cavity. Arising as they do, in connection with the bronchi, they also cause early occlusion of the latter, thereby throwing out of commission large lung areas, and rendering the resulting collapsed lung prone to secondary infections. This type while usually found in the lower lobes is not infrequently found in the upper. The second or lobar type arises in the alveolar epithelium and therefore outside the bronchial tree; it may arise in the walls of old cavities. It usually increases until a whole lobe is involved; or it may appear as nodules scattered equally throughout the lungs, varying in size from a small pea to a pigeon's egg. Extension occurs by the lymphatics to the hilum or it may occur through the erosion of blood vessels. This type while sometimes found in the lower lobes is usually located in the upper. Pleural

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effusions do not occur so early in this type as in the former. The third or infiltrating type is characterized by large areas of involvement commonly giving rise to areas of secondary necrosis. The origin, due to various conditions, is difficult to determine and is probably the product of one or other of the foregoing.

While secondary inflammatory changes and pleural effusions have been mentioned as being common to the first type they are found in all. Their advent may at times dominate the clinical and radiological picture, completely masking the primary growth as the following will illustrate:

Patient, age fifty, teamster, when apparently well was struck in the right chest by the tongue of his waggon. Ten days later on account of persistent right thoracic pain he consulted his physician, who referred him for an x-ray examination. Evidence of fluid occupying the right chest was found. Subsequent history showed a primary lung carcinoma.

Primary sarcoma of the lung is rare. It would appear that while cases have been reported, they are not above suspicion. Ewing states "that no one has succeeded in tracing the origin of any of the malignant sarcomas of the lung, and the general field of pathological changes in this organ does not point clearly to specific conditions under which mesoblastic tumours may arise." Secondary sarcomata on the other hand are common.

Primary endothelial tumours of the pleura while they occur are extremely rare. The pleura becomes thickened by the infiltrating growth. Effusion occurs early and generally masks the disease.

From the radiological standpoint it is of interest to see at times how closely the various malignant growths of the lung coincide with the pathological types, thereby testifying to the importance of the x-ray in the study of pathology. The tumour of bronchial origin is usually found in the hilum extending outwards. If stereoscopic plates were made at an early stage it is quite possible that nothing very definite beyond an accentuation of the hilum shadows would be noted, yet owing to the fact that the bronchi are involved, there will always be an irritative cough. According to the degree and location of bronchial occlusion there will also be limitation of lung movement which should

be noted both on the screen and on physical examination. The clinician as well as the radiologist will be advised to watch carefully this region, especially if the patient be near the carcinomatous age. At a later date the x-ray plates will show a definite mass protruding from the hilum with infiltrating edges, and extending into the lung parenchyma. Clinically the patient will of course complain of cough. Dyspnoea which may have been present before will now be marked, especially upon exertion. While it is supposed to be due to occlusion of the bronchi either by compression or obstruction, other factors probably enter into its causation. It is true, however, that the degree of dyspnoea is not so dependent upon the size of the mass as revealed by the x-ray, as upon its location and relation to the structures at the hilum and in the mediastinum. Clinically, this dyspnoea has often been regarded as of cardiac origin, but if one will carefully inspect the thorax a definite and sometimes extensive limitation of chest movement will be noted, which may be out of all proportion to the size of the growth as shown upon the plates; further, if the clinician will make a careful auscultatory examination, other physical findings relative to diminished air intake will be elicited over the involved side with compensatory signs over the normal lung. In contrast with the tumours of bronchial origin, the lobar, arising as it does from the alveolar portion, and therefore without the bronchial tree, may attain considerable size without symptoms. This is unfortunate as the patients, unaware of their serious malady, do not consult their physician until the growth has developed a sufficient size to produce pressure. The x-ray plates will then show a definite mass with smooth though sometimes indefinite edges. The tumour is more or less confined within the boundaries of the affected lobe. When, however, the alveolar carcinoma occurs in nodular form the x-ray will show the lungs more or less uniformly studded with small opacities, varying in size from a small tubercle to a nodule of $1\frac{1}{2}$ - 2 cm. in diameter, whose borders are irregular and of the infiltrating variety. Large opaque shadows may be present due to conglomerate areas. These cases may be quite advanced before symptoms are present; the irritating cough

with dyspnoea eventually compels the patient to seek medical aid.

The clinician and pathologist will at times be surprised to see the comparative smallness of lung tumour in contrast to the changes exhibited on an x-ray film. On first thought this might make one think that the x-ray is misleading. We must remember that the primary growth is rarely uncomplicated. Secondary inflammatory processes have an excellent medium in which to develop and may occur at any stage. Clinically it often happens that the secondary inflammations are not only the immediate cause of the patient's seeking medical advice but so dominate the clinical course that growth is not suspected. Radiographically these changes are shown as bronchopneumonic or pneumonic areas and in the tumour of bronchial origin the early occlusion of a bronchus renders the resulting collapsed lung prone to secondary infection and abscess. These various processes are all capable of casting shadows of a density equal to that of the tumour, and may be so intermingled that the original tumour is completely masked; and from the general shadow the various lung changes cannot be differentiated. The advent of fluid, while occurring earlier in the bronchial type occurs in all forms, depending upon the time of pleural involvement or upon the interference with the pulmonary lymphatic circulation. Once fluid is present it renders the x-ray interpretation difficult, if not impossible. The fluid must be withdrawn before any opinion can be given as to the underlying causation. The fluid itself should always be carefully examined as it may give the first definite findings. In some cases, particularly in the infiltrating variety, the growth may extend through the lung and along the pleura giving rise to marked pleural thickening, which from the x-ray standpoint will act as fluid. In such cases an induced pneumothorax may fail to be of aid.

From the foregoing it will readily be seen that the radiologist is confronted by many problems just as complicated as those of the clinician. He is not only supposed to differentiate between types of pulmonary carcinoma, but also between masses of carcinomatous origin, and masses such as arise from other malignancies, benign growths, or even inflammatory masses simple or engrafted upon some

underlying and often unsuspected disease. From cases which have come under my own observation the chief inflammatory diseases which had to be considered were bronchitis, bronchiectasis, pleural effusion, abscess, tuberculosis and syphilis. Upon first thought it might seem that bronchitis and bronchiectasis should not be confused, but in the early changes of bronchial carcinoma, shadows in the lower lobes especially when conditions are complicated by secondary inflammatory processes may occur which are often puzzling and can only be interpreted by subsequent re-examinations which in time will demonstrate the growth protruding beyond the hilum into the lung substance. The differentiation between massive growths and pleural effusions from inflammatory causes is often difficult, especially as these growths in the late stages are nearly always complicated by fluid. Non-carcinomatous effusions tend to displace the mediastinum as a whole, while large lobar growths involving the upper lobes by pressure may displace the oesophagus, trachea or heart; yet one is often surprised to find massive growths showing no evidence of mediastinal displacement. This is probably due to the marked thickening and fixation of the mediastinum and pleura by the infiltrating bronchial growths; or the growth may by involving the parietal pleura exert traction upon the mediastinum, pulling it towards the diseased side. When fluid is present its removal is demanded before any opinion can be given as to the probable underlying cause. If this simple procedure were carried out fewer mistaken diagnoses would be made. The majority of pulmonary abscesses are readily differentiated; usually the abscess area is surrounded by a zone of healthy lung. In cases of long standing abscess complicated by thickened pleura or fluid, great difficulty is often experienced especially as lung carcinomata are prone to form areas of necrosis, eventually giving rise to cavities of varying size. These may readily be confused with simple abscess especially if fluid levels occur. As carcinomata are often complicated by pleural thickening and some effusion of fluid it may be impossible to obtain satisfactory plates, and while the clinical history and course may be of aid, yet cases occur in which the true diagnosis is left to the pathologist. Tuberculosis as

a rule does not offer any special difficulty to a trained radiologist except in those cases in which fluid or thickened pleura obscure lung definition; but even in these there is usually something to be found either in the diseased or opposite lung, indicative of a tuberculous lesion, while in carcinoma, the uninvolved lung is usually clear. The greatest difficulty arises in those rare cases of nodular miliary distribution which at times may simulate tuberculosis so closely that a definite radiographic opinion cannot be given. In general the tubercles of carcinoma are larger and more irregular than those of tuberculosis. Other signs such as conglomerate shadows are more prone to be found in carcinoma. The clinical course is distinctly different from miliary tuberculosis. Pulmonary syphilis assumes no constant form. The presence therefore of any abnormal lung condition demands the routine Wassermann examination and sometimes the application of the therapeutic test. This will readily demonstrate whether or not syphilis be present.

Intra-thoracic masses of non-inflammatory origin must be carefully considered from the standpoint of origin, location and outline, etc., before they can be differentiated from primary lung carcinoma. Mediastinal masses are relatively common and may result from cardiac enlargement, aneurysm or true mediastinal growths such as Hodgkin's disease, lymphosarcoma, malignant thyroid, sarcomata, etc. The cardiac and aortic cases will offer little difficulty. Mediastinal growths as a class exhibit many symptoms in common with primary lung carcinoma and clinically may be difficult to distinguish. Radiographically they show many important differences, among them being the marked increase in mediastinal width, posterior displacement of the oesophagus and flattening or compression of the trachea associated with a clear lung parenchyma. The screen examination will show the marked mediastinal opacity and, most important, the lung movement equal on both sides, thereby differing from primary pulmonary carcinoma which shows marked unilateral diminution if not absence of movement. This latter differentiation is often overlooked clinically.

Cysts show a smooth non-infiltrating border sharply demarcated from the surrounding lung structure. Echinococcus cysts may occur any-

where within the lung substance. Dermoids usually spring from the mediastinum. Other growths such as aberrant thyroids, or sarcomata, may so simulate primary lung carcinoma, especially the lobar or massive types, that it is impossible to distinguish them. Their ultimate differentiation will be made by the pathologist and even then various opinions may be obtained. Secondary malignancies either carcinoma or sarcoma, are not uncommon, in fact they are found with surprising frequency. They usually offer no great difficulty. They appear singly or in large numbers as small, round, soft shadows varying from half-an-inch to an inch or two in diameter suspended in the lung substance, differing considerably from the nodular type of alveolar carcinoma which always exhibits an irregular infiltrating border.

Primary lung carcinoma is therefore not an easy problem to solve, yet if the cases are properly studied a large majority of correct diagnoses will be obtained. Each case will exhibit a different problem due to the phase that the growth presents when first seen by the clinician and radiologist. The failure to realize this point is probably the commonest cause of error; it inevitably leads to mistaking the complications for the disease and entirely overlooking the underlying growth. The fact that they are growths which grow and thereby change, demands that serial plates be made so that the roentgenograms can be compared at different periods. This is especially true of slow growing masses such as those which arise from the pleura, and of certain malignancies simulating benign cysts, etc. Serial observation will demonstrate the benign from the malignant tumours owing to the lack of growth. The diagnosis between the various types of primary lung carcinoma will depend upon the stage in which they are first seen; if early it can be done with a fair degree of certainty. If extensive and complicated it will be impossible, nor should the radiologist be discouraged, especially as the pathologist is often unable to state the type. In general the tumour of bronchial type in its early stage uncomplicated by infection, often gives clinical manifestations out of proportion to the x-ray findings, while in the tumour of lobar or alveolar origin the x-ray findings are often startling in comparison with the duration of symptoms.

Considering the question from its etiological standpoint, the x-ray examination has thrown no light on the probable causation of primary lung carcinoma. It is merely another method of studying this complicated problem, the solution of which will have to come from other sources.

The object of this paper is not to act as a guide for radiologists but to serve as a basis

of understanding for the clinician and pathologist, so that they may realize the problems of the radiologist. His are as difficult as theirs. No field offers more interesting diagnostic problems than primary lung carcinoma, but the solution of any case can only be reached by the clinician, pathologist and radiologist working in co-operation.

NEWER METHODS FOR THE DETERMINATION OF PREGNANCY*

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THE establishment of a diagnosis of pregnancy may be simplicity itself or a matter of the greatest difficulty. As a general rule it may be stated that the ease of diagnosis increases with the duration of pregnancy though such is not invariably the case. The positive signs of pregnancy, foetal movements and the detection of foetal heart sounds, do not occur in the first half of pregnancy and in many cases are difficult or impossible of detection even in the latest months. Of recent years the detection of the foetal skeleton by means of the x-rays has become a definite sign of pregnancy but even with the best technique the foetal skeleton can rarely be satisfactorily demonstrated before five months¹. Any means, therefore, that will serve to establish, or render more probable, a diagnosis of pregnancy in the first half, or even more so in the first ten weeks, will be of the utmost value.

The differential diagnosis of pregnancy rests between tumours of the uterus, notably fibroid tumours, inflammatory disturbances of the uterus, such as subinvolution, tumours of other abdominal organs, especially ovarian cysts, and false pregnancy or pseudoeyesis. When it is borne in mind that pregnancy may exist with fibroid or other tumours of the uterus and cystic or solid tumours of the ovary or other pelvic or abdominal organs the difficulty of diagnosis may be appreciated. Instances are

not wanting where a pregnant uterus has been removed for a supposed fibromyoma of the uterus.

In the early months of pregnancy the diagnosis is made usually on the history of amenorrhœa; of subjective symptoms such as nausea or vomiting, faintness, frequency of urination, tingling of the breasts; and by bimanual examination to determine increase in the size of the uterus, alteration in its shape, softness of the cervix and especially of the isthmus between the cervix and corpus uteri, duskeness of the vaginal mucosa, pulsation in the fornices, etc. In this way it is usually possible to determine a pregnancy of eight weeks or sometimes even earlier especially in a primipara. But as all signs fail in dry weather so all signs mentioned may fail when it is most desired to make a definite diagnosis. Thus, menstrual periods may previously have been irregular, or conception may occur during lactation, subjective symptoms may be due to other causes, and physical examination, especially in multiparæ, may give uncertain findings. These difficulties have long been recognized and in recent years the advances in bio-chemistry have given a fresh impetus to the search for supplementary means of diagnosis in suspected early pregnancy.

It is well recognized that pregnancy affects not only the pelvic organs but affects, and profoundly so, the whole maternal organism. The fact that chorionic villi have been found in the

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maternal blood stream led Abderhalden² to assume that some mechanism must be developed by the maternal organism to render the foreign protein harmless. This, he thought, was accomplished by the development of a ferment in the maternal blood which breaks down the fetal tissues into simpler and harmless substances; and consequently the blood serum of pregnant women should possess the power of breaking down placental tissue into its component amino acids.

His method consists in placing in a small dialysing tube a definite quantity of especially prepared placental peptone and 1 or 1.5 cm. of the serum to be tested. The dialysing tube is then introduced into a small flask containing 20 cm. of distilled water and placed in the thermostat for sixteen hours. By the end of this time the specific ferment, if present, will have broken down at least a part of the placental peptone when the resulting amino acids, together with a portion of the salts will have diffused out into the distilled water while the colloidal material remains within the tube. The presence of amino acids in the dialysate is determined by a one per cent solution of ninhydrin which gives a delicate purple colour on heating.

His work was published in 1912 and excited the greatest interest. Other workers, however, failed to obtain his results and the method is so complicated that it can be satisfactorily employed only by especially trained laboratory workers. The Abderhalden reaction was recently studied by Smith and Shipley³ of the Graduate School of Medicine of the University of Pennsylvania. Their conclusions are:

1. While the natural ferments present in serum are somewhat increased there is no evidence that a specific ferment exists in pregnancy.

2. The tests on the serum of pregnant women were uniformly positive but the large number of positive results on the sera of men and non-pregnant females proves the test of no value for the diagnosis of pregnancy.

Within the last few years attention has been directed to the study of methods for the detection of glycosuria in pregnancy. It is true that earlier workers made contributions to this subject but the facts were not correlated.

In 1856 Blot showed that pregnant and puer-

peral women have occasionally glycosuria far more frequently than other people.

In 1895 Von Jaksch studying neurological cases found accidentally that two pregnant women showed glycosuria after the ingestion of 100 gm. glucose. His assistant, Dr. Frederick Lanz, investigated the phenomenon and reported a series of thirty patients all but two of whom had reached the eighth month of pregnancy. From his work he concluded that the assimilation threshold for glucose is lowered in pregnancy and rapidly returns to normal after labour. Hofbauer in 1899, using practically the same technique, reported forty-five cases, thirty-nine positive, six negative.

His conclusions were that glycosuria is a symptom of pregnancy which disappears when the physiological relationship between the foetus and maternal parts is destroyed.

From recent literature⁴ the following conclusions may be drawn regarding spontaneous glycosuria in pregnancy.

1.—The spontaneous glycosuria usually appears after the sixth month of pregnancy.

2.—It is mild in type, the amount in the urine being usually less than 1 per cent; it is often intermittent and there is slight, if any, hyperglycæmia.

3.—The sugar excretion is independent of the carbohydrate in the diet.

4.—There are no other symptoms of diabetes.

5.—The glycosuria disappears after labour.

The recognition of glycosuria as a symptom of early pregnancy is the clinical outcome of work done by Ryser in 1916 and Gruenthal in 1919. The former determined that when pregnant women were fed on a series of different sugars the blood sugar values never exceeded normal physiological limits. The latter showed that the blood sugar curves were identical in non-pregnant and pregnant women after ingestion of like amounts of glucose but that the pregnant women responded with glycosuria. The blood sugar values never exceeded 200mg. to the 100 cc. of blood (0.2 per cent). In 1920 Frank and Nothmann⁵ of Breslau published a series of cases in which they had used ingestion glycosuria as a sign of early pregnancy and had tested nineteen women without one failure. Having a preliminary specimen of blood and urine they administered 100 gms. of glucose on a fasting stomach; then collected urine speci-

mens every fifteen minutes and blood every hour for two hours. Considering 190 mg. to the 100 cc. of blood (0.19 per cent) as top normal for the blood sugar value, they found that the blood sugar never exceeded this figure and that the glycosuria always appeared within one hour in positive cases. They found the test to be unreliable after the third month. A positive result was obtained from an early ectopic gestation when foetal and maternal parts were still in living relationship.

Other investigators using this method reported 247 reacting positively and twelve negatively.

Wetz and Van Nest⁶ of Detroit have published their results on the sugar test in pregnancy in seventy-one cases. In the first twenty-seven cases 100 gm. of glucose were used. As this was not entirely satisfactory a change to 150 grams was made. As the cases reported from Germany were from women accustomed to a low sugar intake and as American women are accustomed to a high daily intake it was thought that a larger amount of sugar could be used with advantage. Folin and Burglund⁷ showed that 200 gm. of glucose could be taken at one time without producing any glycosuria.

Wetz and Van Nest reached the conclusion that a spontaneous or artificially induced renal glycosuria with a blood sugar estimation below 0.19 per cent in the first twelve weeks after conception is a valuable aid in the early diagnosis of pregnancy. In their experience the test proved correct in more than 95 per cent of their cases.

Working on the hypothesis that the ingestion glycosuria is a type of renal diabetes Kamnitzer and Joseph⁸ of Berlin proposed to find that dose of phloridizin which would not produce renal diabetes in the normal but would produce it in the pregnant woman. Their technique as at first published called for a dose of 2.5 mg. of phloridizin, that is, one-fourth of the minimal dose of phloridizin required to produce a glycosuria in the normal non-pregnant adult.

In 1922 Kamnitzer and Joseph⁹ published a revised technique. A preliminary specimen of urine is voided and the patient given 2 mg. phloridizin intraglutaneously. At the same time eight to ten ounces of water are given and repeated in half an hour and one hour. The urine is collected at the end of a half hour, one

hour, and one and a half hours and tested with Nylander's reagent. This is much more sensitive than Fehling's or Benedict's reagents and it is advised that boiling should be continued for five minutes preferably in a water bath. The exact dose of phloridzin combined with novocain is now on the market under the name of "Maturin." The manufacturers of maturin claim that a negative result in all three portions indicates absence of a normal undisturbed pregnancy. A positive result in any one or all of the three portions while certainly not an infallible indication of an existing pregnancy has so far proved reliable in the great majority of the cases tested and subsequently carefully followed up.

Maturin diagnosis of pregnancy is possible only up to the end of the third month. Its greatest degree of reliability prevails apparently during the first six weeks. Thus the test is at its best in the period in which it is most needed. In abortions the test will function only as long as most of the placenta is attached. In cases in which blood has been lost since the suspected pregnancy started the test is indistinct, or fails entirely. In this class belong patients who have previously undergone abortions or suffer from pelvic, cervical, or similar inflammatory complications.

Antipyrine, salicylic acid, and salicylates including aspirin, saccharine, camphor, chloral hydrate, chloroform, pituitary and suprarenal preparations must not be used by the patient for two days previous to submitting to the maturin test as the Nylander sugar test is disturbed, or entirely obscured, by the action of these substances on the organism.

From a survey of the literature¹⁰ one reaches the conclusion that the test is not infallible but that the great majority of uncomplicated pregnancies in the first three months will give a positive reaction while healthy non-pregnant women will give a negative reaction. There is a difference of opinion as to whether the disturbance of the assimilation threshold is due to a lowering of the renal filter action or to insufficiency of the liver. Others ascribe it to ovarian hypo-function or to the influence of the corpus luteum.

Roubitschek¹¹ in 1922 modified the Frank and Nothmann test by having only 10 gm. of glucose in place of 100 gm. ingested and by inject-

ing hypodermically 0.5 cc. epinephrin 1: 10,000. His work was based on the hypothesis that suprarenal extracts lower the assimilation threshold for sugar. Williams¹² of Philadelphia using this modification obtained positive responses in nineteen out of twenty women tested.

I have used the maturin test in two cases. Case No. 1 was a multipara whose last menstrual period occurred on September 20th, 1924. She did not wish to carry on and endeavoured to produce abortion by inserting a wire into the uterus. She bled quite freely, became frightened, and consulted me. I put her at rest in bed for some days. On December 2nd, I applied the test and obtained a positive result, with distinct blackening of the precipitate in the first sample of urine after injection. The uterus is enlarged and clinically she is pregnant.

The second case is that of a primipara recently married and unwilling to become pregnant at the present time as she contemplated a trip to California. Her last menstrual period occurred on October 19th, 1924. I applied the test on December 9th. The test was negative in all three specimens of urine. In this case bimanual examination was inconclusive. The latter case is too recent to establish a definite diagnosis of pregnancy or non-pregnancy but the results will be awaited with interest.

Reuben Peterson¹³ of the University of Michigan in articles published in October, 1921, and February, 1922, has called attention to the value of pneumoperitoneal roentgenography in obstetrics and gynaecology. He makes the following positive statements:—

"It has been found that the isthmus is greatly enlarged and extends more into the broad ligaments in cases of pregnancy than in the non-pregnant. So striking is the change in the isthmus that by this sign alone it has been possible to diagnose pregnancy by the x-ray as early as the sixth week and before softening can be determined definitely by the examining finger. The sign is constant from two and one-half months onward, but we have not had sufficient material to date (1921) to be too dogmatic about the presence of this enlargement of the isthmus in every case of early pregnancy."

In February, 1922, he writes: "In eight cases of pregnancy from the sixth to the tenth week the condition was positively diagnosed by the roentgenogram without knowledge of the history or the vaginal examination findings. In each instance the diagnosis was confirmed by the subsequent history," and again: "In pregnancy advanced more than ten weeks the thickening of the isthmus is very marked, so that beyond the tenth week pregnancy can invariably be recognized by the pneumoperitoneal film long before the foetal bones can be demonstrated. This diagnostic sign is especially valuable in the case of fibroids complicated by pregnancy. Again, the absence of the sign is valuable in demonstrating the non-pregnant uterus when menstruation ceases at the menopause, giving rise to great mental disturbance in patients who have been exposed to, and fear, pregnancy."

N. Zoppi¹⁴ describes the various biological tests which have been proposed for the detection of pregnancy. Accelerated sedimentation of erythrocytes, as described by Fahreus and Linzenmeier, although constantly present at certain stages of pregnancy, cannot be detected until after the third month; it occurs also in inflammatory conditions, especially those located in the pelvis. The phloridzin test gives positive results in the earliest months, but it is of diminishing significance from the fifth month to term; a negative result is of greater diagnostic importance than a positive. Costa has recently described a test as follows: Three drops of blood serum are mixed with 1.5 ccm. of 2 per cent solution of novocain in physiological salt solution and three drops of 5 per cent sodium citrate solution. The globulin having been precipitated, a drop of pure formaldehyde is added. A positive result is indicated by the appearance, within three to fifteen minutes, of a milky ring at the bottom of the test tube. Zoppi finds this reaction to be negative up to, and positive after, the end of the second month of pregnancy in healthy subjects. He adds that it persists until the twentieth day post partum, a fact which he thinks may prove to be of medico-legal utility. In inflammatory conditions of the uterus and adnexa, ante- and post partum, Costa's reaction is said to be negative.

Conclusions

1.—The Abderhalden test is of great scientific interest but at present of no practical value in the determination of pregnancy.

2.—It has been definitely established that there is a lowered assimilation threshold for sugar in pregnancy leading to a spontaneous or readily induced glycosuria.

3.—The methods of Frank and Nothmann, Roubitschek, and Kamnitzer and Joseph give presumptive evidence for or against pregnancy.

4.—The pneumoperitoneal roentgenogram may be of great value in the diagnosis of early pregnancy.

5.—There is no doubt that great and important discoveries will be made in bio-chemical studies of the pregnant woman.

6.—While the diagnosis of pregnancy in the vast majority of cases will continue to be made by the usual methods of history taking and physical examination which are usually sufficient the newer methods described will be of

considerable value in confirming, or in some instances, of establishing, a diagnosis which has not been arrived at by the older methods.

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Hereditary Ankylosis of Proximal Phalangeal Joints.—The family record in the case cited by D. C. Elkin, Atlanta, Ga., has been traced through five generations; but, owing to migration of individual members to many parts of the country, and the fact that no genealogical table has been kept, the record is exceedingly meager. It is known by the patient that the trait has been carried through five generations; the first and second by male, the third and fourth by female ancestors. Men and women are equally affected, and both transmit the trait. In the author's case the proximal phalanges of the middle, ring and little fingers of both hands are ankylosed. The index fingers and thumbs are normal. The subject, a man, aged twenty-five, has not been incapacitated in carrying out his work as a manual laborer. Except for some enlargement of the bones, there is no evidence of a proximal joint in the middle, ring and little finger of either hand.—*Jour. Am. Med. Ass.*, Feb. 14, 1925.

Lethargic Encephalitis was unusually prevalent in 1924 in Great Britain and Ireland, though, apart from Italy and Sweden, where smaller outbreaks have occurred, it was not observed so frequently on the European continent as during previous years. It reached a maximum in the middle of May, in England, and early in June in Scotland; in 1923 the greatest number of cases were notified in March, and in 1921 in February. The decline of the epidemic was slow, and the number of notifications became stabilized in September and October at a very much higher level than in previous years. The type of disease differed from that of earlier outbreaks in that the case fatalities rarely exceeded 20 per cent, whereas formerly it had been 50 per cent. The onset often resembled influenza, and abortive attacks were frequent. The usual oculo-lethargic type was less common than during earlier epidemics, and many cases were characterized by myoclonic symptoms.

PYELITIS OF PREGNANCY*

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DURING the two year period beginning in October, 1921, and ending in October, 1923, there were thirteen cases of "pyelitis of pregnancy" treated in the wards of the Toronto General Hospital. The use of the ureteral catheter as an aid in the treatment of these cases was introduced and this study was undertaken in an endeavour to correlate the findings and determine the results obtained.

ANALYSIS OF CASES

Age.—Of the thirteen patients, five were twenty years of age or under; four between twenty and twenty-five; three between twenty-six and thirty and one between thirty-six and forty. Nine patients, or 69%, were under twenty-five years of age.

Duration of pregnancy.—This series showed that two were at four months, six at five months, three at six months, one was seven months pregnant and one was eight months. Thus eleven or 85% of these cases occurred during the middle three months of pregnancy.

Previous illnesses.—One patient gave a history of "kidney trouble" at seven years of age. Three cases gave a definite history of constipation and one had not had a movement for ten days previous to admission. Two had had miscarriages; eight were pregnant for the first time; two had had one baby; one had two; one had three; and one had had eight children. Hence pyelitis occurred more often during the first pregnancy.

Symptoms in order of frequency of occurrence:

	Cases	Percentage
Pain	13	100%
Frequency	10	77%
Burning	7	54%
Chills and Fever	7	54%
Vomiting	3	23%
Haematuria	1	8%
Blurring vision	1	8%

All patients complained of a sharp pain in the flank, three in both sides, eight in the right and

two in the left. Pain radiated along the course of the ureter in four cases and three patients complained of a sharp pain in the affected flank on breathing.

Examination.—On examination there was definite tenderness in the costo-muscular angle of the affected side though the kidney could be felt in one case only. Tenderness was accompanied by rigidity in some cases very marked and in others hardly noticeable. The urine in all cases showed pus in varying amounts, was acid in reaction, and albumin was present in all but one. Sugar was absent in all, while red blood cells were found in one case. *B. coli* were found in eleven cases, "bacilli" in one case (probably *B. coli* but it was not determined) and *Staphylococcus aureus* in one. No urine showed tubercle bacilli. White blood counts ranged from 10,000 to 16,000 and one blood culture showed the presence of *Staphylococcus aureus* (case 8). Routine blood cultures were not done. The blood pressure was not increased.

Cystoscopy was done in eleven cases. In one of these (case 2) the catheter engaged in the right ureteral orifice but would not go up. The bladder picture was that of an acute cystitis showing a general oedema and considerable redness more marked in the region of the ureter of the affected side. In a few cases a cloudy efflux of urine could be seen coming from the ureter. In the majority, no obstruction was encountered with the ureteral catheter but five (cases 1, 3, 5, 9, 12) gave a free flow from the kidney as if the catheter had tapped a small reservoir.

Treatment.—All patients were confined to bed, sitting on a gatch frame. An attempt was made with one to have her lie on the side which was free from pain, elevating the foot of the bed and the hips, in an effort to carry the gravid uterus up and over to the opposite side and relieve the pressure on the ureter. This was not successful. Fluid diet was used during the acute stage and later changed to a soft diet with great increase in the fluid intake. Alkalies in large quantities were administered to make the urine alkaline, after which the quantity was decreased, giving sufficient only to keep the alkaline reaction.

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Sodium bicarbonate in doses of a drachm combined with potassium citrate in doses of thirty to forty grains every four hours gave the best results; later, in some cases, the reaction of the urine was suddenly changed to acid in an effort to kill out the organisms; autogenous vaccines were also used.

Ureteral catheterization was done primarily for drainage and secondarily for local treatment. The catheters were allowed to remain "*in situ*" for twenty-four to twenty-eight hours injecting 5% argyrol, 1/1000 silver nitrate or sterile water every four hours. Each time the local antiseptics were used the end of the catheter was plugged for fifteen minutes. Those treated by drainage and sterile water appeared to do just as well as those treated by drainage and the local antiseptics. It was found that the temperature in pyelitis of pregnancy tended to recur every five days as if there were a filling up of the reservoir formed by the dilated ureter and pelvis, and ureteral catheterization was repeated to head off the temperature by draining the infected sac. Severe pain recurring in the affected kidney was looked upon as another indication for repeating ureteral catheterization. Divided functional tests and pyelograms were not done as it was not thought advisable to prolong the patient's examination or incur unnecessary risks.

Results.—In the thirteen cases treated, four had another complication. Two developed jaundice with bile in the urine. An increasing pulse rate with progressive weakness made it necessary to induce labour. One case (6), had acute dilatation of the heart, an enlarged liver, tender left costo-muscular angle with high pulse rate and fever. Labour was induced and the ureteral catheter was not used. It is doubtful if this patient could have undergone cystoscopy or that it would have helped her. Case 8 was a *Staphylococcus aureus* septicæmia which had been present for two weeks previous to admission. This was the only fatal one in the series. It was not a true pyelitis with a *B. coli* infection as found in the other cases but showed multiple abscesses in the kidney substance, the result of the septicæmia.

The early stage of all the true pyelitis cases were treated with varying success by internal medication alone. Some were treated in hospital by this method and later by the ureteral catheter. Nine of varying severity were treated by alkalies and the ureteral catheter with complete relief of symptoms. In none that were uncomplicated

was it necessary to induce labour. The pus decreased markedly but in only one case did the urine become sterile.

Diagnosis.—The determination of the existence of pyelitis was made on the history of pain, associated with tenderness in the costo-muscular angle, rigidity in the flank, urinary symptoms of frequency, pain or burning, and rarely of haematuria, with a change in the character of the urine. Examination of the urine in a case with these symptoms usually showed pus, albumin and organisms, most frequently *B. coli*. These facts were sufficient to make a diagnosis of pyelitis in a pregnant woman provided none of the other urinary diseases are suspected such as calculus, renal tuberculosis etc. If convenient an x-ray of the kidney, ureters and bladder should be made to rule out calculus. An important point in the history was always to determine whether there were any urinary symptoms before the commencement of the pregnancy. If there were, one naturally had to look for the cause. The cystoscope and the ureteral catheter were used both to confirm the diagnosis and for treatment, particularly for the relief of symptoms due to urine retained in the ureter and pelvis.

Comments.—In five of these cases one was able to demonstrate clearly the presence of retained urine in the ureters and pelvis. If pyelograms had been taken, there is no doubt that the others as well would have shown considerable dilatation in the pelvis and in the ureters.

Discussion on Cases

The question is asked, when should drainage with the ureteral catheter be done? Treatment by alkalies, rest in bed and fluid diet should be our first plan. The onset of marked tenderness with rigidity and constant pain along the course of the ureter indicate dilatation and retention of urine, chills, fever, and vomiting are signs of toxic absorption, the appearance of any of these symptoms or signs should indicate drainage.

From the findings in this small series of cases one cannot lay down the rule that bile appearing in the urine is an indication for induction of labour. The two patients mentioned were seriously ill and recovered when the uterus was emptied.

Cystoscopy under local anaesthesia in these patients is an unpleasant procedure, but is followed by remarkable results. Undoubtedly the kidney is saved prolonged irritation from the pressure of the retained fluid and possibly is pro-

tected from irreparable damage; so much is this the case that early cystoscopy is recommended and when it is done it will bring about almost always complete disappearance of pain with the relief of distension.

Conclusions

1. Pyelitis of pregnancy is more common in patients twenty-five years and under.
2. It is more common during the middle three months of pregnancy.
3. It occurs more frequently during the first pregnancy.
4. It occurs more often in the right kidney.
5. *Bacillus coli* is the common infecting organism.
6. Residual urine in the ureter and kidney is relieved by an inlying ureteral catheter.

Case Reports

Case 1.—Age twenty. Primipara. History of constipation. Complaining of pain in the back radiating to the front on both sides for one week. This pain is accompanied by chills, fever, vomiting, nycturia and slight burning. Abdomen full, size of five months' pregnancy. Tenderness in both costo-muscular angles which is increased with deep inspiration. Kidneys not palpable. *Cystoscopy:* profuse flow of turbid urine from both sides. Catheters left in for forty-eight hours. Pus and *B. coli* present in large quantities. Pain and tenderness disappeared immediately following drainage of kidney pelvis.

Case 2.—Age twenty-two. Primipara; one miscarriage. Complaining of pain in left flank with frequency. Uterus one inch above the umbilicus, tenderness in left costo-muscular angle accompanied by pain on deep breathing. *Cystoscopy:* Catheters to both kidney pelvis. Urine from the left kidney turbid, contained much pus and *B. coli* on culture. Right kidney urine was clear and free from pus. All specimens were negative for tubercle bacilli. Tenderness disappeared following drainage by catheter. Discharged with the pain and tenderness gone completely, though a few pus cells were present in the urine.

Case 3.—Age twenty-one. Primipara. Complaining of pain in the right flank which radiated to the groin and down the back. No chills, fever, vomiting or urinary symptoms present. Duration, two days. Two molar teeth decayed. Six and one half months pregnancy, marked tenderness and rigidity in the right loin. Kidney not felt. *Cystoscopy:* "Steady flow from both catheters as if from behind an obstruction" found on passing ureteral catheters. Catheters remained in for forty-eight hours. Lavage of renal pelvis carried out every four hours using 5 c.c. 5% argyrol. Temperature remained down after lavage and the pain and tenderness disappeared.

Case 4.—Age twenty-eight. Second pregnancy. Complaining of pain in the right flank, frequency and burning for two months. Blurring of vision had been present for one month. She fell a week before admission and the pain became worse and was accompanied by chills, fever and vomiting; no haematuria. She was four and one half months pregnant. Tenderness and rigidity present in the right costo-muscular angle. Very slight tenderness in the left costo-muscular angle. *Cystoscopy:* Catheters passed to both kidneys and both specimens showed pus, *B. coli*, and were negative for tubercle bacilli. Inlying catheters for twenty-four hours. Pain and tenderness disappeared, and temperature remained down. Blood pressure 124:75. W.B.C. 10,000.

Case 5.—Age nineteen. Primipara. Constipation, Typhoid two years ago. Three weeks before admission she had a fall which was followed by frequency, burning, and by pain in the right flank radiating down to the groin. Five months pregnant. Mitral systolic murmur, tenderness in right costo-muscular angle. *Cystoscopy:* Pus and gram negative bacilli in both ureteral specimens. Catheters allowed to remain in eighteen hours, washed with 1:1,000 silver nitrate. Pyelogram, right 13 c.c., left 7 c.c. No treatment given, later catheters to kidneys and left in twenty-four hours carrying on pelvic lavages with 5% argyrol every four hours. Bile appeared in the urine, temperature remained up, patient became jaundiced and labour was induced. Blood pressure 120:70. W.B.C. 12,600. Recovery.

Case 6.—Age eighteen. Primipara. Complaining of pain in the left side just below the ribs; chills, fever, vomiting and frequency. Four and one half months pregnant. Tenderness in left costo-muscular angle. Heart enlarged to right and left, rate 140 per minute. Liver enlarged to 3 cm. below the costal border. *Urine:* acid; 1,012; albumin trace; sugar negative; pus, large amount; *B. coli*; no bile; no casts. *Cystoscopy:* not done. Blood pressure 130:68. W.B.C. 16,400. Blood culture sterile. Hb. 62%. R.B.C. 3,800,000. Induction of labour. Following this the temperature, pulse and respirations came down and remained down.

Case 7.—Eighth pregnancy. Constipation. Complaining of pain in the right flank, frequency and burning for thirteen days. Bowels not open for ten days. Five months pregnant uterus. Tenderness in right costo-muscular angle. *Cystoscopy:* Catheters passed to both kidneys, both washed out and catheters withdrawn. Both kidney specimens showed a few pus cells and *B. coli*. Cystoscopy repeated and both catheters left in for drainage and pelvic lavage but were pulled out by the patient. *Urine:* acid; 1,020; albumin present; sugar negative; pus considerable; *B. coli* present; casts none. R.B.C. 4,600,000; W.B.C. 14,200; Hb. 104%; non-protein nitrogen 43 mgms. per 100 c.c. of blood. *Progress:* Patient vomited a good deal, bile appeared in the urine and she was jaundiced. Labour induced. Recovery.

Case 8.—Patient complaining of chills, and pain in the back for two weeks. During this time she had no urinary symptoms but continued at her work. A nasal catarrh was present. Temperature, 103; pulse, 140; respiration, 24. Uterus was up to four inches above umbilicus, eight months' pregnancy. Patient appeared acutely ill and had a good deal of tenderness and rigidity in the right flank and costo-muscular angle. *Urine:* few white blood cells; albumin; no casts. Culture; *Staphylococcus aureus*. Blood culture; *Staphylococcus aureus*. Operation. Exploration of right kidney. A pyæmic kidney found, dull red in colour and containing multiple small abscesses. A nephrotomy was done and considerable pus and blood obtained. The kidney decreased slightly in size. Labour commenced spontaneously, baby born and died. Patient died. *Diagnosis:* Pyæmic kidney.

Case 9.—Age twenty. Primipara. Complaining of pain in the bladder region, frequency and burning for six days. Severe colicky pains had occurred in the right flank coming every twenty minutes and radiating along the course of the right ureter but not into the labia. Chills, fever, headache and nausea were present but no vomiting. Bowels regular. Uterus one and one half inch above umbilicus, tenderness and rigidity in right costo-muscular angle and flank. *Cystoscopy:* Catheter introduced to right kidney pelvis. This did not run even on repeated washings. Cystoscopy repeated using a Garceau catheter. There was a very free flow of urine. 128 c.c. collected in four minutes. A few days later Garceau catheter introduced into the right ureter, very free flow until 105 c.c. collected and the urine slowed. Garceau catheter again introduced and 80 c.c. of urine collected before the drops came slowly. Left ureter was not catheterized. *Urine:* bladder and right kidney urine

contained a good deal of pus and *B. coli*. There was also a trace of albumin. *Blood pressure*: 110:68. W.B.C., 16,800. *Progress*: Her pain was relieved each time cystoscopy was done (with exception of first) and she was carried along to term when labour was induced. Third and fourth catheterizations were done on a rising temperature which dropped immediately. The pain in the flank disappeared with relief of the distension.

Case 10.—Age twenty-five. Primipara. Complaining of pain in the right costo-muscular angle; pain on urination has been present for one month. History of constipation. Four months pregnancy, pain and tenderness but no rigidity in the right costo-muscular angle. Right kidney palpable but not enlarged. *Cystoscopy*: Catheter to both kidney pelvis. Drainage and lavage of the right for twenty-four hours. Expecting a fifth day rise in temperature a Garceau catheter was introduced to the right kidney pelvis. Specimen collected showed no pus and was sterile on culture. *Urine*: showed no albumin, pus in large quantities, *B. coli* on culture; negative for tubercle bacilli. *Progress*: no pain, tenderness or abnormality until the baby was due in May when pus appeared again in the urine and labour was induced. Recovery.

Case 11.—Third pregnancy; one abortion. Complaining of frequency, pain, burning and haematuria present for one week. Pain was present in the right flank which "caught" when she took a breath. Tenderness and rigidity in the right flank and the uterus half way to the umbilicus. *Cystoscopy*: Catheter engaged in the right ureteral orifice but would not go up. *Urine*: contained albumin, pus in large quantities with *B. coli*. Left ure-

teral specimen was negative for pus. No organisms were found on culture. *Progress*: this patient's temperature went from 102.2F to normal in five days and remained down. No further cystoscopy was done.

Case 12.—Age twenty-two. Complaining of pain in the left flank with frequency during the previous four weeks. She had chills and fever. Six months pregnant. Tenderness in both costo-muscular angles. *Cystoscopy*: Number six ureteral catheters were introduced to both kidney pelvis. Oedema and redness about both ureteral orifices. There was a very free flow from both catheters, left, 152 drops per minute, right, eighty-eight drops per minute which continued for twenty minutes. *Urine*: pus and *B. coli* were present in both kidney specimens. *Blood pressure*: 120:80. *Progress*: catheters removed in eighteen hours owing to abdominal pain thought to be due to gas. Two days following catheterization her pain was gone and she left the hospital.

Case 13.—Complaining of pain in the right flank and back for four months, burning during and after urination with some frequency. Pregnancy of six months duration. Uterus slightly above the umbilicus. Great rigidity and tenderness in the right costo-muscular angle. The right kidney was not felt. *Cystoscopy*: Efflux from the right ureter cloudy. Urine collected was cloudy and contained many pus cells, clumps of bacilli and no casts. *Blood pressure*: 108:56. Non-protein nitrogen, 22.5 mgms. per 10 c.c. *Treatment*: catheter inlying in the right ureter and pelvic lavage every two hours. *Progress*: rigidity disappeared in twenty-four hours. Slight tenderness and rigidity remained. Discharged five weeks before confinement.

EXTREME SENSITIZATION IN INFANTS TO COW'S MILK PROTEIN*

DIAGNOSIS AND TREATMENT

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ALTHOUGH our knowledge of the sensitization of individuals to proteins has been obtained in comparatively recent years the literature on this subject is already very extensive. It has been definitely proven that asthma, angio-neurotic oedema, urticaria, eczema, acute dermatitis, gastro-intestinal disturbances in infants and many other conditions may be the direct result of a sensitization of the individual to certain proteins. It is not the object of this paper to review the literature, or discuss the various manifestations which may be produced by this curious condition but rather to confine our attention to the symptoms produced in in-

fants by extreme sensitization to proteins and the treatment which may be given in these cases.

This condition is not so rare as might be assumed at first. During the past year one of us (F. F. T.) has encountered in practice two such cases of extreme sensitization and many others have been noted by other members of the staff of the Hospital for Sick Children. These two cases will be discussed in detail in the present paper.

It has been shown by Schloss¹ that with the majority of infants or children sensitive to proteins, a family history of similar disturbances may be obtained. With a total of eighty cases he obtained a definite history of similar disturbances in the parents, brothers, or sisters in forty cases, while in seven cases the history

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applied to the grandparents. In thirty-three cases no history of similar disturbances in the family was obtainable. However, in sixteen of these thirty-three patients the symptoms developed the first time a certain food was eaten so he considered that the condition was in all probability congenital in origin. In the present two cases a positive family history was obtained in both instances. With Baby H. T. the paternal grandfather was subject to angioneurotic oedema. Also a paternal second cousin was later found to be mildly sensitive to cow's milk. With Baby J. C. the father's paternal grandfather was extremely susceptible to bee stings and would become unconscious after being stung by a bee. The father's mother was susceptible to pork which when ingested produced a severe urticarial rash. Also the mother's father suffered from asthma. It is thus evident that at least in the present two cases the sensitiveness to proteins was hereditary in origin.

The nature of the sensitization is not definitely known. It is either identical with, or closely related to the condition of anaphylaxis. The chief difference is that to produce the latter condition in experimental animals it is necessary to give a preliminary injection of the foreign protein. In some days' time a second injection of the same protein produces the anaphylactic reaction. As already shown the majority of patients with sensitization to protein show the typical reaction directly after the *first* ingestion of the offending substance. The explanation has been offered that these cases simply inherit the tendency or ability to become sensitized easily, and that some time before the comparatively large quantity of the protein is taken, minute sensitizing doses have been received. If this is so then the condition may be considered identical with anaphylaxis. The work of Shannon² is rather suggestive in this regard. He has shown that it is possible for minute quantities of protein to be absorbed and secreted essentially unchanged in the mother's milk without producing any reaction in the mother, yet when the mother's milk is ingested by the infant a definite reaction is produced due to this foreign protein. It is quite evident that this so-called sensitization to proteins is at least closely related to the condition designated as anaphylaxis.

Symptoms.—The symptoms, which may be very alarming and are not without danger to the patient, are generally first noted when an attempt is made to wean the infant. The infant swallows a small amount of the diluted cow's milk and then refuses to take more. Almost immediately it will start to cry as though in pain, the crying being generally aggravated by the repeated attempts of the parent or nurse to give the patient more food. In the course of about two to five minutes there will appear a definite swelling of the lips, tongue and mucous membranes of the mouth and throat. This swelling occurs wherever the milk has come in contact with the mucous membranes. Frequently if any milk has been spilt on the skin definite swelling with redness will occur there also. The swelling of the mucous membranes of the larynx may be such as to endanger the life of the child through obstruction to the passage of air. This difficulty of air entry may be also due to a swelling of the bronchial mucosa, a reaction which is no doubt similar to an urticarial reaction of the skin. Also there is probably some contraction of the bronchial musculature. At the same time the patient may pass into a condition of shock. In some instances huge urticarial wheals appear over the whole body. After fifteen minutes to one hour the symptoms disappear and the child returns to its former condition although usually some signs of exhaustion remain.

Diagnosis.—The diagnosis in these cases presents little difficulty on account of the striking and unusual symptoms which appear directly after the first administration of cow's milk. The diagnosis can be readily confirmed by using the skin test which consists in placing some of the cow's milk on a scarified area of skin. After ten to thirty minutes the milk is wiped off and if the reaction is positive a large wheal will cover and surround the site. The reaction is almost invariably positive with these cases of extreme sensitization, although with milder cases in which the chief evidence of the sensitization is a gastro-intestinal upset the skin test may be negative. Schloss mentions that he has encountered five such cases out of a total of one hundred and twenty-two. During the past year we have encountered one case of this type. It is readily seen that the diagnosis presents little difficulty in the marked cases.

On account of the frequency of sensitization to other proteins the skin tests should not be confined to cow's milk alone but should include the various proteins encountered in the common articles of food. Purified proteins prepared for this purpose may be procured from various commercial laboratories.

Treatment.—The treatment in these cases consists in desensitizing the infant to cow's milk. This takes a considerable time. As the cases are not usually diagnosed until cow's milk is given in an attempt either to wean the baby or to supplement an insufficient amount of mother's milk, considerable difficulty may be encountered in securing an immediate supply of proper food for the infant. As goat's milk is readily available in most places, the infant should be tested to determine its susceptibility to the protein in this type of food. If it does not react, then the immediate feeding problem is comparatively simple, as the infant may be fed the diluted goat's milk without difficulty. However, these infants frequently react to goat's milk as well as to cow's milk. This makes the immediate feeding problem a serious one. The process of desensitization usually requires about three to four months. During this time every effort should be made to continue the supply of breast milk, whether or not it is sufficient to meet all the requirements of the infant. It may be supplemented with other feedings which although they do not contain all the food elements required, still suffice to sustain the infant over this trying period. In the present two cases the materials used were soy bean flour, on account of its high protein content, barley flour and dextri-maltose. The details are given in the case reports. If the supply of breast milk from the mother fails entirely and the general condition of the infant is poor it is advisable to obtain breast milk from a wet nurse.

The process of desensitization consists in giving the infant gradually increasing doses of cow's milk. In the present cases both infants were started with one dram before each feeding of a mixture of four ounces of water and one drop of milk. The milk was increased about three drops a day. The rate of increase of the dose is governed by the amount of milk the infant can take without producing a too

severe general reaction. After a time a small amount of whole milk such as one dram, may be placed directly in the whole day's supplemental feeding. This amount should be increased as rapidly as possible until the patient can take as much as one and a half ounces of cow's milk per pound of body weight per day. This is sufficient to supply the necessary amount of protein for the repair and growth of tissue in the average infant. The energy requirements are covered by the addition of carbohydrates.

It is thus seen that the treatment of these cases consists in securing a temporary supply of food either in the forms of breast milk, goat's milk or some cereal mixture while the patient is desensitized by the oral administration of increasing amounts of cow's milk.

Case 1.—Baby J. C., only child, born October 26th, 1922. No history was elicited of any sensitization to proteins in the parents. The father's paternal grandfather, however, was extremely sensitive to bee stings. The father's mother was sensitive to pork which when ingested produced a severe urticarial rash. The mother's father suffered from asthma. The infant was full term and the labour normal. The patient was entirely breast fed for six months during which time she gained normally in weight and showed no symptoms of any abnormality with the exception of a mild seborrhœic dermatitis. On April 20th, 1923, on account of a slight illness of the mother the infant was offered a supplemental feeding of milk one ounce, water one ounce and granulated sugar half a dram. She refused to take the bottle so one teaspoonful of the feeding was placed in her mouth, about half of which she swallowed. She refused to take any more, cried vigorously for a short time and then became limp. The breathing became forced and irregular. A few drops of milk had been spilt on the neck and on this area the skin became red and swollen for about fifteen minutes. No further attempts were made to feed the baby cow's milk that day. On April 21st, skin tests were made for sensitiveness to various proteins and positive results obtained with the following: (1) Raw cow's milk; (2) boiled cow's milk; (3) St. Charles evaporated milk; (4) St. Charles evaporated milk (boiled ten minutes); (5) cow's milk powder; (6) protein milk powder;

(7) lactalbumin powder; (8) goat's milk; (9) egg white; (10) beef. No reaction was obtained with soy bean, barley, corn, oat, rice, wheat, prune, carrot, potato, and orange.

Treatment and Progress.—The baby was given one dram of a mixture of one drop of cow's milk in four ounces of water before each feeding starting April 23rd. The infant was restless, cross and appeared uncomfortable for about half an hour after each feeding. The slight rash on the face became more marked. The amount of milk was increased one to two drops a day until by May 8th twenty-two drops or half a teaspoonful were placed in the four ounces of water. During this time the patient showed at intervals a slight general reaction but there was no local reaction. The quantity offered and the strength of the milk was increased until on June 12th, the baby was given half an ounce of a mixture of one part milk and six parts water. In a few minutes the whole skin became diffuse red in colour, which lasted about half an hour. The child was also very irritable. The strength of the milk was reduced to one part of milk in eight parts of water which produced no reaction.

The infant had been receiving a supplemental feeding of one tablespoonful of cooked farina three times a day since May 16th, and on June 7th the diluted milk was replaced by giving a few drops of whole milk on the farina. There was no reaction. The milk was increased daily until on July 6th two drams of milk were given with each of the three feedings with no reaction.

On July 7th the baby was given one ounce after each nursing of the following mixture: soy bean flour one-half ounce, barley flour one-third ounce, dextri-maltose one-quarter ounce, milk one ounce and water ten ounces. This was cooked for one hour in a double boiler, then water added to replace that boiled away. No reaction was produced by this feeding. The amount of milk was increased and by July 15th she was receiving two ounces of cow's milk per day with no reaction.

Shortly after this the parents left with the infant for a summer camp. St. Charles Evaporated Milk was substituted for the fresh milk, one ounce of the evaporated milk equaling two and two tenths ounces of fresh milk. The amount of milk and the total amount of food was steadily increased until when the

family returned to the city in the early part of September the infant was getting in the food twelve ounces of evaporated milk each day. No reaction was produced by this. The baby was then weaned entirely.

There are only a few points of interest in the subsequent history. On September 27th, 1923, at the age of eleven months she weighed twenty pounds. Various additions have been made to the diet until now (June, 1924) she is on a normal diet for her age with the exception that she does not receive egg white or beef. She can now take a glass of fresh pasteurized milk with no reaction and appears to be a perfectly normal child in all respects. Cod liver oil and orange juice were given throughout the course of the treatment.

Case II.—Baby H. T., second child, born July 27th, 1923. The first child was quite normal. The father's father was subject to angioneurotic oedema. A second cousin on the father's side, born subsequently to the patient was found to be mildly sensitive to cow's milk. The infant was full term. The labour was normal. He breathed well, cried vigorously and was a good colour directly after birth. He never had any convulsions. He was breast fed every three hours.

The baby was apparently normal until August 6th, when he was reported to be breathing very rapidly. On examination he was found to be cyanosed and breathing at the rate of one hundred per minute, with marked indrawing of the chest at the attachment of the diaphragm, with each inspiration. The abdomen was somewhat distended. The temperature was normal. Dr. E. A. Morgan and Dr. R. I. Harris saw the patient in consultation. The lungs and heart appeared normal. There was no evidence of obstruction of the intestinal tract. Roentgenogram of the chest showed no enlargement of the thymus. A gastro-intestinal series showed no abnormality of the intestinal tract. No explanation could be found for the unusual symptoms presented by this patient. Although the thymus showed no evidence of enlargement a treatment by Roentgen-rays was given on account of the cyanosis and rapid breathing, which frequently accompanies this latter condition. This was done on August 8th. Two days later the child was definitely improved and in one week's time appeared quite

normal. On August 16th, a second Roentgen-ray treatment of the thymus was given. The patient was seen again on September 1st and appeared normal with the exception of a marked seborrhœic dermatitis which involved the scalp and face.

The infant was not seen again until the end of January, 1924. He had been breast fed since birth. On January 21st the mother attempted to give him some cow's milk and water. He got only three or four drops then started to cry vigorously and refused to take any more. Five minutes later it was noticed that the lower lip was decidedly swollen. No more cow's milk was given. On January 22nd skin tests were made for sensitiveness to various proteins and positive results obtained with the following: (1) Cow's milk pasteurized; (2) cow's milk powder; (3) evaporated milk; (4) boiled cow's milk with the laetalbumin removed; (5) laetalbumen; (6) protein milk powder; (7) Horlick's malted milk; (8) Eagle brand condensed milk; (9) Klim; (10) goat's milk. No reaction was obtained with his mother's milk, whole egg, beef, wheat, barley, corn, oat, imperial granum, soy bean, carrot, potato, rice, prune and orange.

The patient was still suffering from a marked seborrhœic dermatitis of the scalp and face.

Treatment and Progress.—The infant was obviously not getting enough breast milk so an additional feeding of one ounce of the following mixture was given after each nursing, soy bean flour one-half ounce, barley flour one-third ounce, granulated sugar one-quarter ounce and water to ten ounces. This was cooked for one hour in a double boiler then water added to replace that boiled away. The patient was given one dram of a mixture of one drop of milk and four ounces of water before each nursing. No reaction was produced. The milk was increased three drops a day. During this time the infant was receiving daily from twenty-five to thirty ounces of breast milk. By February 15th, the strength of the milk mixture had been increased to seven teaspoonfuls of milk in four ounces of water. After taking one dram of this before each feeding he would be irritable for about an hour. The irritability did not appear when the milk mixture was stopped for a feeding.

The amount of milk in the milk mixture was

increased now at the rate of one teaspoonful a day. A small amount of milk was also added to the soy bean mixture. On March 1st the soy bean mixture contained six drams of milk, and the four ounces of milk mixture seventeen drams of milk. After the morning feeding of this date he had a definite reaction with swelling of the lips and marked irritability. The milk in the soy bean mixture was reduced to four drams, which did not produce any reaction. The weight on March 10th at seven and a half months of age was fourteen pounds and six ounces. The milk was then increased one dram a day, and also the amount of the soy bean mixture until on March 25th the infant was receiving four ounces of milk each day in fifteen ounces of the soy bean mixture. Also he was receiving one dram before each feeding of three parts milk and one part water. No reaction was produced. By April 23rd the baby was receiving the following mixture: Milk twenty ounces, water ten ounces, soy bean one and a half level teaspoons, barley flour one and a half level teaspoons and granulated sugar one and a half level tablespoons. He was now nursed only once each day. The weight was fifteen pounds and six ounces. The following week he was weaned entirely and given eight ounces every four hours five times a day of a mixture of milk thirty ounces, water ten ounces, and one ounce of granulated sugar. No reaction was observed. His weight on May 25th, 1924, at ten months of age was sixteen pounds and four ounces.

The face still shows slight evidences of the dermatitis, otherwise the patient appears quite normal in every respect. Cod liver oil and orange juice were given throughout the course of the treatment.

When it was discovered that this patient was sensitive to cow's milk, the records at the hospital where it was born were examined. There is no evidence from the records that the infant received supplemental feedings of cow's milk prior to the onset of the symptoms at that time. However, the mother, who ordinarily never took milk, was taking large quantities of cow's milk each day, and it is quite possible that some of the cow's milk protein passed unchanged to the mother's milk. There now appears to be little doubt that the symptoms observed shortly after birth were not due to any abnormality of

the function of the thymus but probably to the sensitization of the infant to cow's milk protein.

Summary

Two cases of extreme sensitization to cow's milk protein are reported.

The diagnosis of this condition usually presents little difficulty on account of the striking and unusual symptoms which appear directly after the first administration of cow's milk.

The symptoms usually are, refusal of the infant to take cow's milk after a few drops have been swallowed, followed by pain as evidenced by crying, swelling of the skin and mucous membranes wherever touched by the milk, and

symptoms of shock as evidenced by rapid shallow breathing and cyanosis. Sometimes a general urticaria of the skin appears.

The treatment consists in desensitizing the infant by giving minute doses of cow's milk which are gradually increased until the necessary amount for the nutrition of the child is administered. To accomplish this usually required three or four months' time.

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MULTIPLE MYELOMATA

WITH REPORT OF A CASE

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THE term "myeloma" in its strictest sense is now generally confined to a class of cases characterized by certain definite clinical and pathological findings, and presenting a distinct entity, the most important features of which are: The occurrence of multiple primary tumours in the bone marrow, with pain, increasing anaemia and debility, leading to a fatal termination; the presence in the urine of a specific albumose. Fever may be a symptom, but it is not always present or marked.

There is still some existent confusion regarding these tumours, owing chiefly to the application of the term "myeloma" to bone tumours not conforming to this type. This is particularly seen in English surgical text-books, the authors of which discuss under the heading myeloma, those giant cell tumours of the epulis type, which are now regarded by many pathologists as being of inflammatory nature and not true tumours. The importance of this is not great from the etiological standpoint because it is not yet proven whether "multiple

myelomata" are of neoplastic or other origin, but that it tends to a lack of clarity of ideas concerning conditions which have so little in common clinically and pathologically. In view of the conservative treatment possible in the epulis type of tumour, and the, at present, hopeless outlook of cases of "multiple myelomata," these two conditions should not be confused.

Bence-Jones in 1847 reported the presence of a peculiar protein in the urine of a case of osteomalacia, which has since been found to be present in a large percentage of cases of myeloma. The earliest reported cases of multiple myeloma are those by McIntyre, 1850; Weber, 1867, Rustizky, 1873, who first applied the term "myeloma"; Kahler, 1889; Wright, 1890; Christian, 1907. By 1912 some fifty cases had been reported, this had increased to about one hundred by 1920 and since then about forty cases have been added to the literature on this subject.

The disease is confined almost entirely to

middle aged males. The vertebra, ribs and cranial bones are those most frequently affected. Grossly and radiographically there is evidence of expansive growths from multiple foci, with rapid and extensive absorption of both spongy and dense bone and in many cases the appearance of tumour masses external to the bone. True metastases have been reported in a few cases but are rare. Microscopically, several types of tumours are described, conforming with the cells which are found in bone marrow, great emphasis is placed on the uniformity of cell content in individual cases of these types. Ewing¹, in classifying myelomata, divides them into four groups:—(1) plasmocytoma; (2) erythroblastoma; (3) myelocytoma, and (4) lymphocytoma. With the exception of a few cases, however, these tumours conform to two types which are classified by MacCallum² as, (1) lymphoid or plasma cell myeloma, and (2) myeloid myeloma. Commonest of these is the plasma cell myeloma (plasmocytoma) in which the tumours are composed of masses of cells 8-10 microns in diameter, conforming in most respects to the plasma cell as seen in conditions other than those involving bone marrow, where they are conceived of as being concerned in a chronic inflammatory process. The less common type is that in which tumours are composed of larger cells classified as being of myelocytic or myeloblastic origin. It is claimed that these two types of tumours can be differentiated by means of the oxydase reaction.

Case Report

The following case is considered as being well worthy of publication as an example of a typical myeloma of the lymphoid type with predominant plasma cell content, diagnosed during life, and in which after death, an autopsy was performed and some very interesting specimens obtained.

Mr. E. L., age fifty-five years, a farmer was admitted to the University Hospital, September 5th, 1923, complaining of general weakness, difficulty in walking and pain all over the region of the back, this pain being accentuated by movement.

Family History.—Negative.

Personal History.—Measles, mumps, and chickenpox in childhood. He was kicked by a horse during early youth, with injury to back and

fracture of some ribs on left side; he was confined to bed for a month.

In 1910 he was struck on the head by a falling tree and rendered unconscious; recovered without medical aid; no disability. Smallpox in 1911.

In 1916 he fell from a corn crib (14 feet) fracturing three ribs on the right side and injuring the upper part of the dorsal, and the cervical regions of back. For two or three months after this injury the patient was unable to flex or extend his cervical spine without pain. He thinks he got over his injury completely, and was in very good health and able to work until 1923.

In February, 1923, he contracted "flu" and was confined to the house for two months. Pain in the lower part of the back commenced during this attack and after recovery from "flu" still continued and caused the patient to walk with difficulty. In July, 1923, he was thrown by the belt of a tractor, following which injury he had marked increase in pain in the lower dorsal and lumbar regions of the back and was placed in a plaster cast for a month. The patient dates his present illness from this accident. He has not been able to work since this injury and has gradually become weaker. Marked increase in difficulty in walking owing to increased pain in the lower spinal region has followed.



FIG. 1a.—X-ray of skull, showing tumour involvement.

On September 5th, 1923, he was referred to the University Hospital by Dr. Borden of Daysland for observation and diagnosis and admitted to the surgical service of Col. F. H. Mewburn.

Present condition.—Examination showed a pale, emaciated man, with loose skin and flabby musculature. He did not complain of pain whilst resting, but suffered considerable pain in the region of the back and spine when changing his position in bed. Slight kyphosis of the first lumbar and twelfth dorsal spines with tenderness on pressure in this region. The spleen was not felt; slight enlargement of the axillary and cervical lymph nodes. Examination of the vascular system showed a slight systolic murmur over the heart and arteriosclerosis of the radial and temporal arteries.

Blood.—Haemoglobin, 45 per cent; red blood cells, 2,920,000; white blood cells, 4,350; Differential, lymphocytes, 40%; polymorphs, 54%; Transentials, 4%; Eosinophiles, 2%;

Wassermann,—negative.

Urine.—Repeated examinations showed the presence of Bence-Jones albumose.

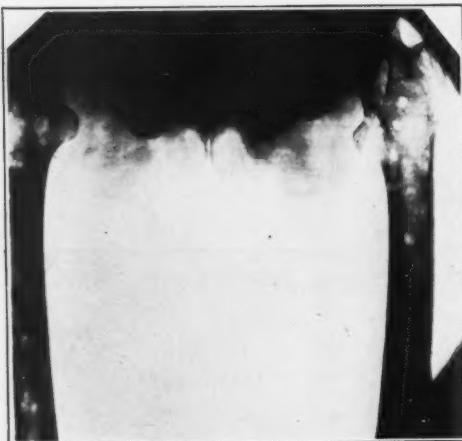


FIG. 1b.—Femurs, showing extensive tumour involvement.

X-ray examination.—Multiple myelomata involving the skull, ribs, vertebrae, humerus, femur, with beginning lesions in other bones.

Clinical diagnosis.—Multiple myelomata.

Patient was removed to his home and died in July, 1924.

Autopsy.—The body was that of an adult male, very much older in appearance than stated age; very markedly emaciated. Over the ramus of the mandible on the right side of the face was a soft semi-fluctuating swelling about

3 cm. in diameter, which was found to be composed of soft tumour tissue arising from that bone. No other abnormality was seen externally. Whilst moving the body, slight pressure on the chest caused the whole of the thoracic wall to cave in. The thoracic and abdominal viscera showed no gross abnormality or evidence of

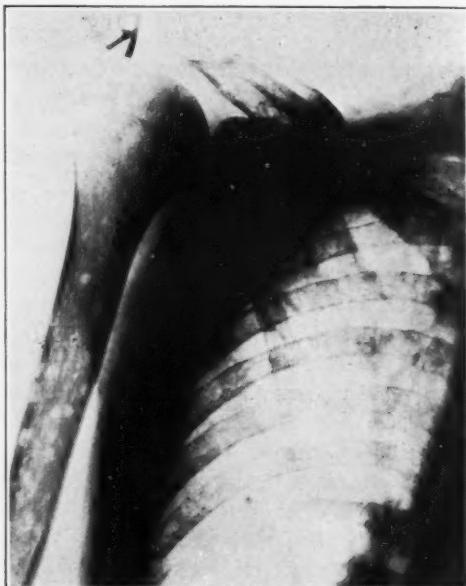


FIG. 1c.—X-ray of humerus and ribs, showing extensive tumour involvement.



FIG. 1d.—X-ray of hand and forearm, showing early tumour involvement.

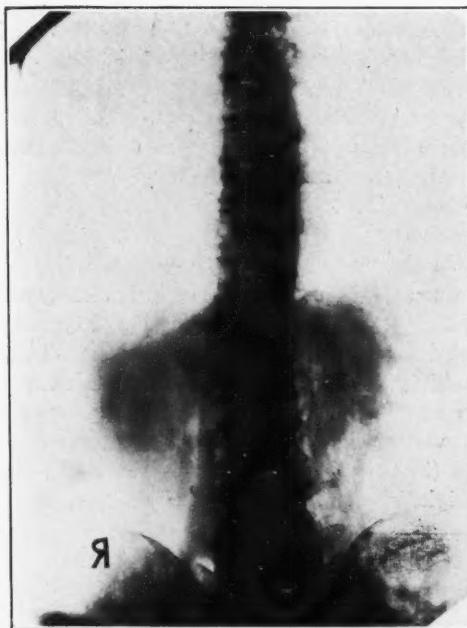


FIG. 1e.—Spinal column, showing extensive tumour involvement.

tumour involvement. On removing the sternum and ribs, the medullary cavity of these bones was found to be involved throughout its entire extent by soft, reddish-grey tumour tissue, with thinning of bone to such an extent that the slightest pressure caused the bone to break. A portion of the vertebral column (thoracic and lumbar regions) was removed, the bodies of the vertebrae being cut through with the greatest of ease by means of a knife. Sagittal section showed the entire bodies of the vertebrae to have been replaced by soft tumour tissue, the remaining trace of bone being confined to the laminae which were not involved, and to some spicules scattered throughout the tumour mass replacing the vertebral bodies. The intervertebral discs were intact. The left humerus was removed and on sagittal section showed the medullary cavity of the entire diaphyseal portion of the bone to be filled by a diffuse, soft, reddish-grey tumour mass similar to that seen in the ribs, sternum and vertebrae and which had almost entirely replaced the marrow tissue and had eroded to an extreme degree the bony shaft, with many foci of perforation through the compact bone to the periosteum. The bones of the lower limbs did not show externally the multiple perforations seen in those of the upper limbs, but there were

many areas of obvious thinning of bone, especially in the femora. The tibiae were involved to a lesser extent. The left femur was removed and on section showed the same diffuse tumour involvement of the medullary cavity of the entire shaft, with marked bony erosion. The fibulae and patellae showed no involvement.

Microscopically.—The tumours are composed of spherical cells, 7-10 microns in diameter, the greater number of which closely resemble plasma cells. In sections made from the tumour masses of the long bones and vertebrae, the cells are predominantly of the plasma cell type, with eccentrically placed nuclei, the chromatin of which is arranged in irregular masses around the periphery of the nucleus, and homogeneous, non-granular cytoplasm, which takes a light pink stain with eosin. The cellular content of the tumour masses of the flat bones shows a large proportion of the cells to be more lymphoid in type with central deep staining nucleus and scant cytoplasm. The stroma consists of a scanty, delicate connective tissue reticulum containing numerous thin walled blood vessels. Many areas show numerous collections of red blood cells between the masses of tumour cells. Some of these vascular spaces are quite large and show definite endothelial lining and connection with other vascular spaces, while in others no definite evidence can be seen of confining endothelium. Scattered throughout the tumours are foci of normal marrow cells and large fat spaces. Of special interest is the apparent relationship of the tumour cells to the abundant capillary content which is seen in some of the tumour masses. A definite linear arrangement of many of the cells is plainly visible throughout the majority of the tissues examined, even where the cells are closely massed together, but this is especially noticeable in those areas in which there is not so much crowding of tumour cells. It is most marked in sections cut from ribs, where practically all the bone had been destroyed, sections being cut through the entire rib without any previous decalcification. Here the tumour cells are closely packed peripherally, but centrally are loosely arranged on a hyaline, structureless ground substance. Coursing through this central area are numerous capillaries of various sizes, suggesting active proliferation and surrounding these and in intimate rela-

tionship to them are columns of tumour cells of the lymphoid type. The larger vessels show quite plainly as vascular spaces lined by endothelium and surrounded by a sheath of rows of concentrically arranged lymphoid cells. Passing in all directions through this central area are small double columns of lymphoid cells, some of which are of considerable length and are seen to denote the presence of fine capillaries arranged in irregular meshwork formation. On closer examination a definite capil-

lary wall of endothelial cells can be seen within the tubular sheath of lymphoid cells, and in many cases communication with capillaries of larger calibre can be determined. Only in a few instances are cells resembling plasma cells seen in the region of these capillaries, but are mostly confined to the closely packed areas of tumour cells, in fact in the rib tumours they are in the minority.

On closely examining the cells found in different regions of the tumours, it is clearly seen that there is not a true uniformity of type, but two definite types of cells:—(1) The small lymphoid type of cell found in relationship with the capillaries with densely staining centrally situated nucleus, with little or no cytoplasm, and (2) the cell resembling a plasma cell, with peripheral arrangement of chromatin, ecen-



FIG. 2a.—Humerus showing perforations on external surface.



FIG. 2b.—Right: Tumour of medullary cavity. Left: Tumour removed; showing bony erosion.

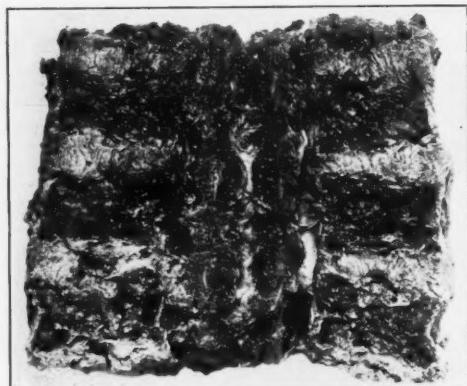


FIG. 2c.—Spinal column (sagittal section). Tumour replacement of the bodies of the vertebrae.

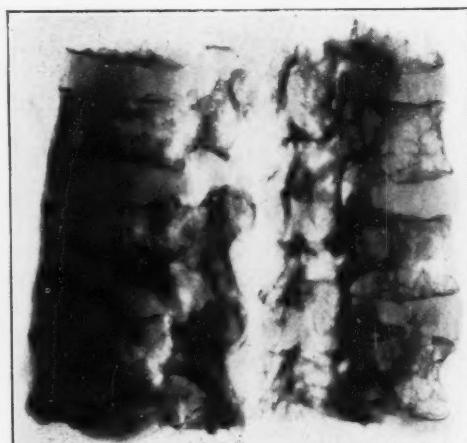


FIG. 2d.—Spinal column. X-ray of portion seen in Fig. 2c.

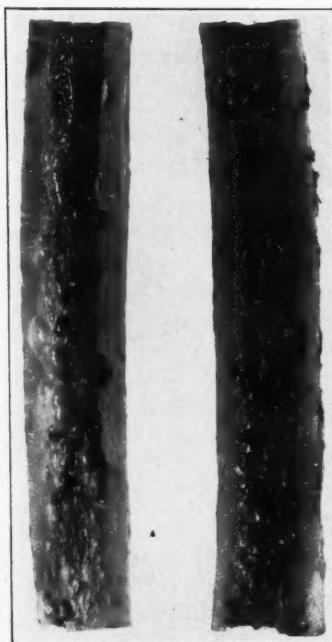


FIG. 2e.—*Right:* Shaft of femur showing tumour of medullary cavity. *Left:* Shaft of femur, showing bony erosion; tumour removed.

trically situated nucleus and abundant faintly staining non-granular cytoplasm which constitutes the larger portion of the tumour. It would seem that these two types are stages in the development of the same cell. The oxidase reaction is negative.

Remarks.—The origin of these tumours is much debated. It is assumed by Ewing that the plasma cell of myeloma takes origin from the adventitial cells of vessels, and not directly from the marrow cell element. He explains on this basis the benign character of the tumour and the aleukaemic blood picture. This is very strongly suggested by the histological study of this case, in which there seems to be a definite relationship between the cells of the tumour and the capillary blood vessels contained in the tumour in some areas. Vanee³ states that the cells are derived from undifferentiated cells of the bone marrow, or myeloblasts, and considers the condition as being in the nature of a true pseudoleukæmia.

Others, considering the clinical features of the disease, and its relatively slow progress and lack of metastatic features, conclude that the condition is in some way concerned with an infectious process. McConiell⁴, favouring

the opinion that the plasma cell found in myeloma is an immature myelocyte which has not yet become mature enough to give the oxydase reaction, draws a comparison between the uniformity of cell type seen in this condition and

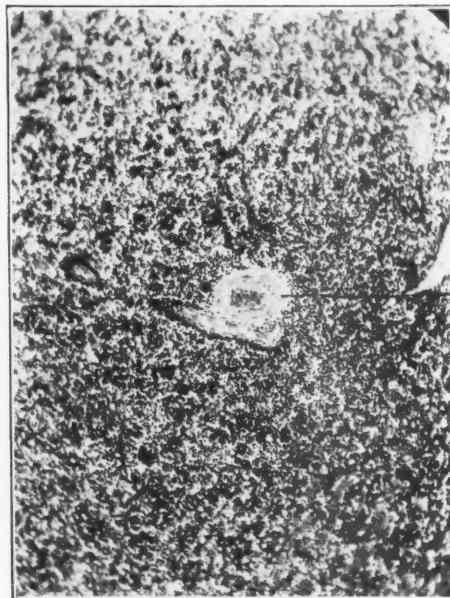


FIG. 3a.—Low power. Compact area of tumour "1" moderate sized artery and vein "2" vascular spaces.

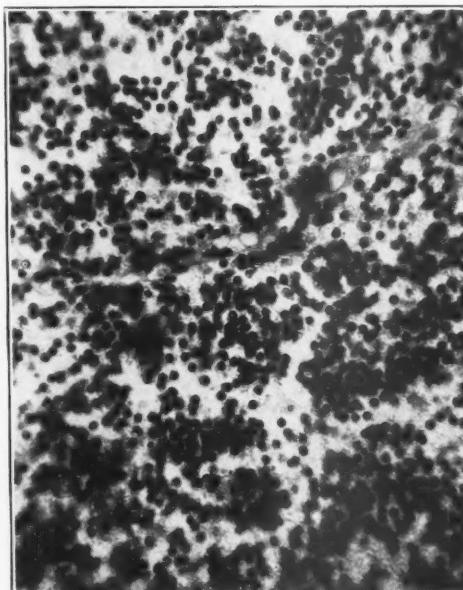


FIG. 3b.—High power. Compact area shown in Fig. 3a.

in that of spindle cell and round cell sarcoma, in which the cell type remains immature and undifferentiated. The benign nature and duration of the disease and the histological picture do not conform with the idea of such an immature type of marrow cell, which in its more

mature phase can give rise to such serious manifestations and which must, owing to the vascularity of the tumour and the intimate relationship of the endothelium of the vascular spaces

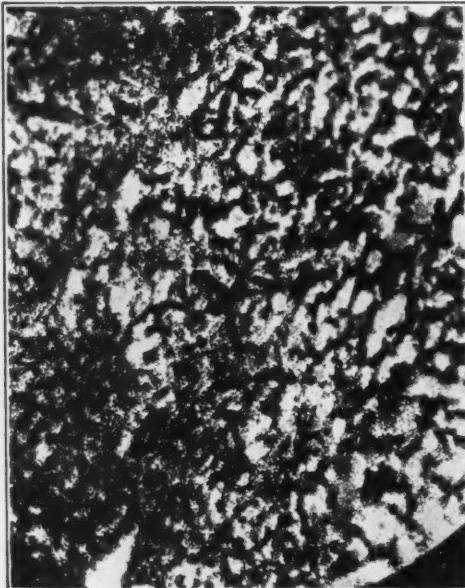


FIG. 3e.—Low power. Capillary area of tumour showing relationship of cells with newly formed vessels.



FIG. 3d.—High power. Capillary area seen in Fig. 3e. Note cross section of one of the vessels.

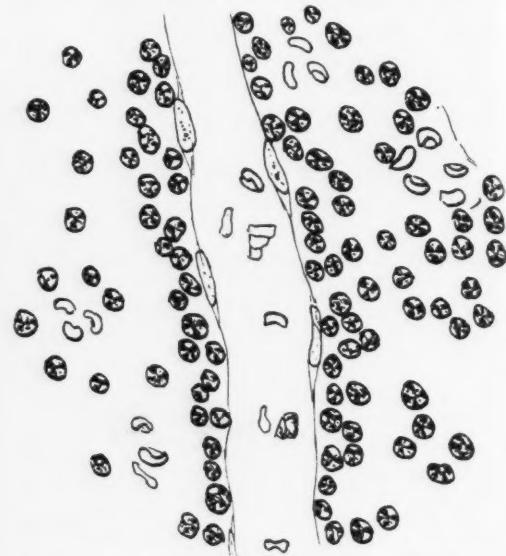


FIG. 3e.—*Camera lucida* drawing x 840. Rib tumour, lymphoid cell type.

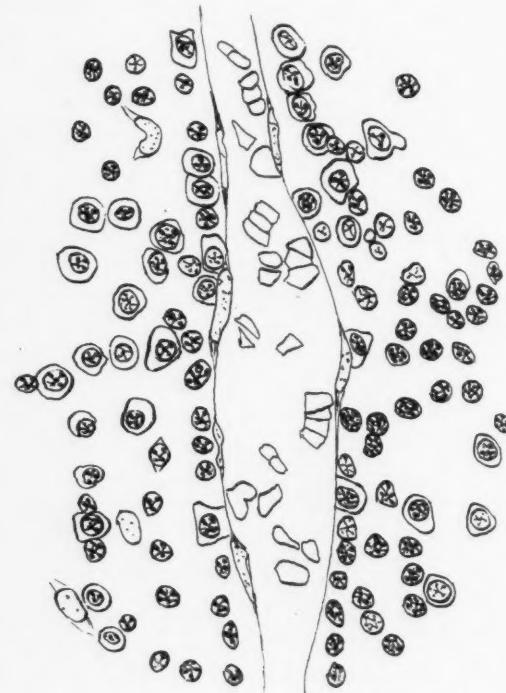


FIG. 3f.—*Camera lucida* drawing x 840. Tumour of long bone, showing two types of cells.

with the tumour tissue, have easy access to the blood stream and be expected to give rise to lesions elsewhere.

It is difficult to understand why these cells if of true marrow origin, should not be consistently thrown into the blood stream in a manner similar to that which occurs in well recognized conditions of hyperactivity of the bone marrow. Moreover, the "plasma cell" is not seen to any extent in those conditions of bone marrow cestacy in which there is abundant and rapid production of myeloblastic cells, nor has their presence been recognized in the histogenetic conception of bone marrow production except in the minor rôle of lymphoid content.

While it is true that the origin and possibly the morphology of the plasma cell is still in dispute and that it is debated whether the plasma cell of myeloma is similar in nature to that seen normally and pathologically in other tissues of the body, the evidence tends to show that these cells are similar in nature. Recent investigations by Kingsley⁵ support the claim of Unna and the opinions of Maxemow and Pappenheim, that the plasma cell originates directly from connective tissue fibroblasts, or indirectly from histogenous lymphoid cells which themselves are derived from fibroblasts. If this be so and it be granted that plasma cells are of a similar nature, whether found normally in the intestinal tract, in pathological inflammatory lesions, or as the essential element of myeloma of the plasma cell type, the latter cannot be of myelocytic origin, nor of true malignant tumour nature but must be considered more in the light of a specific cell reaction in response to a form of stimulation, the etiological factor of which is not yet made manifest.

That like Gaucher's splenomegaly, it is a hyperplastic phenomenon and not a malignant tumour, and intimately related to vascular proliferation. This at least seems more rational than the somewhat paradoxical conception of a tumour of immature cell type which does not behave as such either in manner of origin, or extent of systemic distribution and which lacks evidence histologically of rapid immature cell proliferation.

It is interesting to note in this regard, that tumours similar in nature to the plasma cell myeloma are met with in other situations of the body, and apart from cases of myeloma. A case was brought to our attention in one of the Edmonton hospitals recently of a large tumour of the thigh which was diagnosed clinically as a sarcoma, and which was composed entirely of plasma cells. So certain were the surgeons of malignancy in this case that the report of non-malignancy was accepted with great hesitation. In this case the two cell types and the tendency to relationship with capillary vessels was also observed. It is possible that the metastatic lesions reported in a few cases are of a similar nature, and probably infective in origin.

We wish to acknowledge our indebtedness to Dr. R. Proctor, radiologist of the University Hospital for the great interest taken in this case, and for the valuable plates furnished, and to Dr. R. Shaner, who kindly made the *camera lucida* drawings.

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The Use of Extracts of the Pituitary Gland in Obstetrics.—According to J. Whitridge Williams, Baltimore, the use of pituitary extract in obstetrics should not be considered as harmless, since we are dealing with an extraordinarily potent agent, which is as yet imperfectly standardized. Williams regards as somewhat dubious its use in the treatment of prolonged labor even under the most favourable

conditions, and as extraordinarily dangerous in the presence of disproportion or of malposition of the child. Its greatest field of usefulness is in the prevention and control of atonic haemorrhage following the third stage of labour, while it is relatively efficient in the induction of labour during the last weeks of pregnancy.—*Jour. A. M. A.*, Nov. 29, 1924.

SOME REMARKS ON INDUSTRIAL DISEASES IN ONTARIO*

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DURING the past three and one-half years the Ontario Board of Health through the Division of Industrial Hygiene has brought together information in respect to occupational disease, in order to determine, if possible, its distribution and the extent to which this class of diseases is a factor in the general health of the community.

The information obtained includes only a fraction of the total cases of this type of disease occurring in the province during this period. It has been compiled from the results of health surveys in manufacturing plants, from reports by individual physicians through the Committee on Industrial Medicine of the Ontario Medical Association and from compensation reports.

It is feared that to a considerable extent the attitude of the medical profession, of industry, and of the industrial worker to industrial disease in general is apathetic. The facts do not justify such an attitude. This may be illustrated by the situation with reference to lead poisoning. Compare the number of cases of lead poisoning reported as occurring in Ontario, 147, with the experience in England. The number of workers exposed is unknown so that the total number of industrial workers is used as a basis. The Ontario figures work out at 10.5 cases per 100,000 industrial population per annum. Last year in England there were three cases per 100,000 industrial population. This is after the enforcement of drastic preventive measures over a period of many years. Twenty-five years ago in England there was sufficient number of cases of lead poisoning to cause official inquiry and action. At that time there were nine cases per 100,000 industrial population.

Are we forced to admit that in 1924 the Ontario profession accepted with complaisance a condition 20 per cent worse than that which in 1889 could not be tolerated in England?

The information gained by means of the surveys carried out is by no means exhaustive. It, however, gives authority for the statement that occupational disease is more common than is generally supposed and that it is to be found wherever industrial operations are carried on.

During the time mentioned upward of 350 cases have been encountered, in which the causative agents were substances used in trade processes. This number does not include all the cases brought to our attention. Many cases have not been included because it has not been possible to verify them.

The verified cases classified in respect of the causative agents are as follows:—lead poisoning, 147 cases; mercury, 10 cases; phosphorus, 2 cases; metol, 1 case; poisoning by volatiles, such as turpentine, 22 cases; poisoning by carbon-tetrachloride fumes, 5 cases; poisoning by carbon monoxide, 3 cases; poisoning by potassium cyanide, 1 case; benzol poisoning, 26 cases; wood alcohol, 5 cases; dermatitis from dye stuffs, sugar, nickel, and cutting oils, 102 cases; asthma from exposure to dye stuffs and in the manufacture of artificial silk, 10 cases; cancer from exposure to tar, 1 case; cancer from exposure to oil, 1 case; silicosis and miner's phthisis, 10 cases.

It will be appreciated from these figures that industrial disease is of importance. Two points require attention:—(1) Diagnosis of occupational diseases; (2) Reporting of cases of occupational disease as they occur.

In reference to diagnosis, the experience of the Division of Industrial Hygiene has been that a history of exposure is of primary importance.

Failure to inquire into occupational history in cases of occupational disease generally renders a correct diagnosis impossible. Superficial inquiry also often leads to error. History must be specific rather than general, involving a knowledge of industrial processes. (It is not sufficient to learn that a patient was employed in a paint factory: it must be ascertained that his work exposed him to some sub-

*Read at the Conference on Industrial Medicine, Ontario Medical Association, at the Academy of Medicine, Toronto, January, 1925.

stancee capable of producing the condition for which he seeks advice). This history of exposure will very often direct the investigator in the right direction and a diagnosis otherwise rather difficult will be arrived at. Mistakes in diagnosis are known to have been made because the history of exposure was not obtained. In one case the history disclosed the fact that a man was employed in a plant where ready-mixed paints were manufactured. This man presented certain symptoms and signs and because of the history a diagnosis of benzol poisoning was made. More particular questioning in this case would have brought out the fact that there had been exposure to neither benzol nor lead. The man died from cancer a short time later. Further investigation would have disclosed the true state of affairs and a correct diagnosis would have been made.

Knowledge of the fact that benzol is used in large quantities in the manufacture of rubber goods would have lead, it is felt, to the correct diagnosis in the case of a young man seriously ill and suffering from frequent haemorrhages from the mouth and nose. No diagnosis was made for a long time in this case but frequent fruitless microscopic examinations were undertaken in the hope that the bacillus of tuberculosis would be found. Removal from exposure resulted in an almost complete restoration to health.

Without the aid of the x-ray a diagnosis of silicosis or miner's phthisis in the absence of

a history of exposure is almost impossible, but given certain signs and symptoms together with this history a diagnosis may be made with reasonable certainty which can be confirmed by x-ray.

It may not be possible for every physician in a community the size of Toronto or Hamilton to make himself acquainted with the industrial processes of the many industries. It should be possible, however, for the physicians in smaller places over a period of one or two years to gain an exact knowledge of the industrial hazards to which workers in their community may be exposed.

To secure the reporting of cases of occupational disease is important but it would appear difficult to find a satisfactory method for accomplishing this. The Committee on Industrial Medicine some time ago circularized the profession requesting histories of cases of industrial poisonings. The response to this request in so far as the majority of the profession was concerned was not satisfactory.

To sum up, occupational disease is common in Ontario.

Diagnoses in industrial medicine are greatly assisted by a history of exposure.

To the physician doing industrial medicine a knowledge of industrial processes is essential.

Some method to secure the reporting of cases of industrial disease should be arrived at.

Anginal Attacks caused by Pain in the Left Arm.—G. D. Aronowitsch (*Klin. Woch.*, January 15th, 1925, p. 117) records a case which is of much interest, with respect to Mackenzie's views on angina pectoris of the viscero-somatic reflex. A man, aged twenty-nine, suffered from a gunshot wound of the left arm and amputation was performed a little above the elbow. Amputation neuromata developed later in the stump, and caused great neuralgic pain. Two neuromata were removed, but a haematoma developed after the operation, and persistent severe pain in the arm followed, with repeated attacks of cardiac pain and other symptoms

simulating those of angina pectoris. No signs of heart disease could be detected, but the cardiae region of the chest and the left brachial plexus were hyperesthetic. After twelve days the haematoma was punctured and blood removed. The anginal attacks and pain ceased, and the patient returned to his occupation. No further anginal attacks have occurred. Since primary cardiae and vascular disease can be excluded, the author considers that this case shows that attacks simulating angina pectoris may develop through severe neuralgic pain in the left brachial plexus (senso-visceral cardiae reflex.)—*Brit. Med. Jour.*, Feb. 21, 1925.

INDUSTRIAL TOXICATIONS UNDER THE WORKMEN'S COMPENSATION ACT*

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THE Section of Industrial Medicine is interested in the Workmen's Compensation Act from several angles, viz.: (1) Ordinary accidents resulting in deformities, or impairment of function. (2) In the diagnosis of and compensation for industrial diseases. (3) Medical referees. My remarks will refer particularly to the Workmen's Compensation Act as it deals with industrial diseases. I shall first quote extracts from the above-mentioned act.

Sect. 3 (1) Where in any employment, to which this part applies, personal injury by accident arising out of and in the course of the employment is caused to a workman, his employer shall be liable to provide or to pay compensation.

(2) Where the accident arose out of the employment, unless the contrary is shown, it shall be presumed that it occurred in the course of the employment, and where the accident occurred in the course of the employment, unless the contrary is shown, it shall be presumed that it arose out of the employment.

Referring particularly to the industrial toxications are the following sections:

See. 100 (1) Where a workman suffers from an industrial disease and is thereby disabled from earning full wages at the work at which he was employed, or his death is caused by an industrial disease, and the disease is due to the nature of any employment in which he was engaged at any time within twelve months previous to the date of his disablement, whether under one or more employments, the workman or his dependents shall be entitled to compensation as if the disease were a personal injury by accident and the disablement were the happening of the accident, subject to the modifications hereinafter mentioned, unless at the time of entering into the employment he had wilfully and falsely represented himself in writing as not having previously suffered from the disease.

Sect. 100 (7) If the workman at or immediately before the date of the disablement was employed in any process mentioned in the second column of schedule 3, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the disease shall be deemed to have been due to the nature of that employment, unless the contrary is proved, but, except where the Board is satisfied that the disease is not due to any other cause than his employment within Ontario, no compensation shall be payable under this section unless the workman has been a resident of Ontario for the three years next preceding his first disablement.

Schedule 3 includes the following diseases: Anthrax, lead poisoning, mercury poisoning, phosphorus poisoning, arsenic poisoning, ankylostomiasis and miners' phthisis.

Under these clauses of the act a workman who becomes poisoned and thereby diseased by the chronic application over a long period of time of any amount of poison not mentioned above is not eligible for compensation, and should death ultimately arise therefrom his dependents will not be compensated.

If, for example, a workman is killed through an accident, viz., his inhalation of large amounts of benzol and death promptly results, compensation may be given, but if the exposure to benzol is slight and a chronic disease develops which proceeds to disablement or death, after repeated exposures spread over a period of say six months to two years, etc., no compensation can be claimed.

In the case of lead poisoning, because it is included in schedule 3, compensation can be claimed and will be paid whether the poisoning is acute and by way of accident or not. The discrepancy in the treatment by the act of workmen employed under exposure to these two poisons is very marked and obviously unjust to the benzol worker. We must recognize that the board should not be blamed for these discrepancies in the act, and must realize that its powers are definitely limited by the act. If a precedent were established of granting compensation for an industrial disease, other than mentioned in schedule 3, the board would soon be flooded with applications for compensation on behalf of other workmen affected by other unscheduled industrial diseases.

The main difficulty lies in the wording of the act which limits the number of poisons to those included in schedule 3. This list, I believe, should be extended, and will likely be extended, on request to the proper authority, if the medical profession can prove a specific cause of

*Read at the Conference on Industrial Medicine, Ontario Medical Association, at the Academy of Medicine, Toronto, January 14, 1925.

poisoning which a trained physician is able to readily diagnose.

It is one of the duties of this committee to contribute to this end. The previous work of this committee has been valuable as it has laid down more applicable criteria for the diagnosis of lead poisoning, and also contributed to the diagnosis of benzol poisoning and of nickel rash. In order to continue this work the committee must receive adequate case histories from those physicians who come into contact with these unscheduled poisons so that it may lay down criteria which can be universally accepted by the profession and the board.

Another place where the act affects the employee and physician especially is in the selection of a medical referee. It is he who obviously should form the final opinion to justify or negative the diagnosis of any such industrial intoxication. It is equally obvious that such a referee should have special training in this subject.

The study of these diseases, in Canada especially, is new. The information in regard to them is at present scattered and the clinical pictures are not, as yet, in many cases sufficiently

definite. There are, however, certain diseases where we have definite data and yet marked discrepancy exists, e.g. a case of silicosis, occurring in a grinder, has no claim for compensation, despite the fact that the pathological picture is identical with that known as miner's phthisis occurring in a miner or quarry worker, both of whom are eligible for compensation. It is unfortunate that in such instances the letter and not the spirit of the law is being observed.

In conclusion I would emphasize that:

1.—The act should now be so amended to include other industrial diseases whose diagnosis is known.

2.—That new industrial diseases, as soon as diagnosis is reasonably definite, be automatically added to section 3.

3.—That medical referees, especially in the case of industrial diseases, be physicians specially trained in the diagnosis of such diseases. It might at times be advisable to have a Board of Medical Referees to pass judgment on a case.

4.—Medical opinion in such cases should not be capable of being vetoed by a non-medical administrative authority.

Renal Tuberculosis during Pregnancy.—W. E. Stevens considers that many cases of renal tuberculosis during pregnancy escape detection because morbid urinary symptoms are then comparatively common and because no thorough examination of the urine is made. He records the case of a woman, aged twenty-two, who complained of frequent micturition during the fifth month of gestation. Investigation showed that the urine from the left kidney was normal, but pus cells and tubercle bacilli were found in the urine coming from the imperfectly functioning right kidney. Operation was refused until after the birth of the child, which died at eight months of tuberculous meningitis. The mother was quite well twenty months after nephrectomy had been performed. Stevens considers that if the tuberculous infection affects one kidney only, nephrectomy is advisable without delay, irrespective of the pregnancy. The extra strain thus placed on the sound organ is more than counterbalanced by

the removal of the source of infection and irritation. Nephrectomy during pregnancy is comparatively well borne; in an analysis of thirty-four cases in which the renal lesion was non-tuberculous Stevens has found that only two patients died, and one suffered from a uræmic attack, whilst the pregnancy continued to term in half the cases. Of twelve pregnant patients in whom, according to the literature, nephrectomy was performed for renal tuberculosis, all recovered; normal children were delivered at term in six cases. After operation tuberculin treatment is advocated; a second pregnancy is said to be permissible if the remaining kidney is functionally normal and free from tuberculosis after two or three years. In bilateral cases Stevens prefers tuberculin and general treatment to induction of abortion, which, at best, prolongs the mother's life for only a short period.—*Surg., Gynecol. and Obstet.*, December 1924.

REPORT ON THE USE OF LIPIODOL IN THE DIAGNOSIS OF CORD TUMOUR

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Clinical Professor of Neurology, McGill University, Montreal

Case 1.—G. W. sixteen years of age. Office boy. Admitted June 24th, 1924.

Complaints.—Numbness of legs and difficulty in walking.

Present Illness.—About six weeks before admission, he complained of some pain in the legs which his parents thought were growing pains. He found that he could not run because the joints of his legs seemed stiff, but he could walk about a good deal without getting tired. He fell occasionally, either through tripping over some small obstacle, or else the legs would give away without warning. His parents sent him to the country, but there was no improvement. Then his legs became numb and he found that there was a loss of sensibility. Apparently out of mere curiosity he tested out this loss of sensibility by heating a lamp chimney and applying it to the front of his thighs; the result was third degree burns of both thighs, over quite extensive areas.

There is nothing bearing on the case in either his previous personal or family history.

Examination of the nervous system showed a definite general loss of power in both legs with increased tone. The tendon jerks were active on both sides and plantar reflexes showed bilateral extension (Babinski's phenomenon). There was a loss of sensibility to pain, heat and cold in both legs below Poupart's ligament, i.e., involving the first lumbar segment and all below it. Examination of the cerebro-spinal fluid showed eight cells per emm., no excessive globulin and a negative Wassermann. The blood Wassermann was also negative. X-rays of the spine showed nothing pathological.

The history of the onset of this condition was rather too rapid to be explained by tumour growth, especially with the x-ray of the vertebrae showing nothing pathological; but, on the other hand, the onset seemed too insidious to be accounted for by the usual type of inflammatory lesion, and I decided that it was advisable to exclude any rapidly growing tumour that might be involving the cord.

On July 9th, I introduced a needle into the

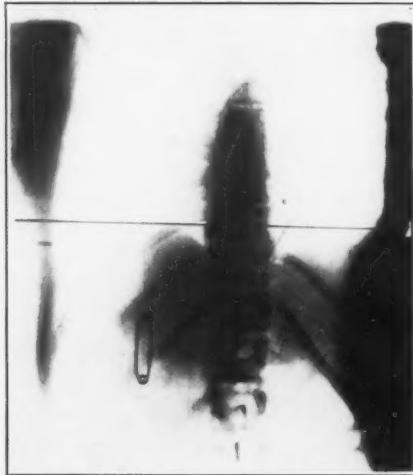


FIG. 1 (Case 1)—Lipiodol can be seen flowing down the thecal canal opposite 12th dorsal and 1st lumbar vertebrae.

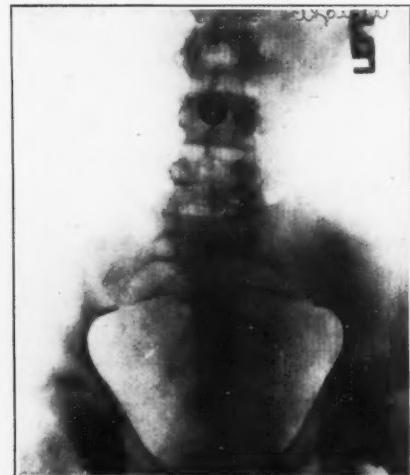


FIG. 2 (Case 1)—Lipiodol is seen collected in caudal end of thecal canal.

cisterna magna and injected one cc. of lipiodol. The patient was then allowed to sit up for a moment and x-rays taken, which showed the lipiodol passing down the spine, passing the site of the lesion and finally collecting in the caudal portion of the thecal canal. (See Figs. 1 and 2).

No untoward symptoms followed and the patient was finally discharged on August 26th, 1924; a certain amount of improvement having occurred in the amount of the paresis and in the extent of the loss of sensibility. X-rays of the spine taken on August 19th, showed the lipiodol still in the caudal end of the thecal canal (see Fig. 3).

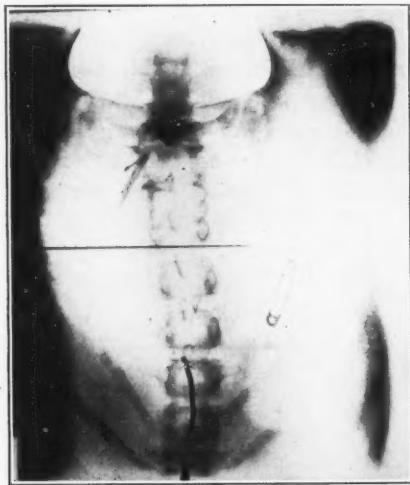


FIG. 3 (Case 1)—Six weeks later showing lipiodol still in caudal end of thecal canal.

Case 2.—Mrs. E. L. Age fifty. Jewish. Admitted March 5th, 1925.

Complaints.—Paralysis of both legs and of the right arm. Some pain in the right shoulder and arm.

Present Illness.—During the early part of 1922 the patient first noticed dragging of her right foot when walking, but this was not sufficient to prevent her from walking or doing her housework. About the same time she noticed a weakness of her right hand and that she was continually dropping things. She also had an aching pain in the right leg and arm, which became so severe in the arm that she had to refrain from lifting it. In fact she insisted that she had had this pain in her right shoulder and arm pretty constantly for fifteen years. It became more and more difficult to get about, but

the condition evidently varied from time to time following treatment. She was admitted to the hospital in November, 1923, complaining chiefly of pain in the left chest and in the right arm. Gastric analysis and a barium series showed some gall bladder infection, and a bile drainage operation was performed. She later went to some sulphur springs and after treatment there, improved considerably, so that she was again able to perform her household duties in July, 1924. In September, 1924, however, the pain in the arm and weakness in the arm and leg again began to increase, but she was able to keep up and about until the end of January, 1925, when her left leg suddenly became cold and numb and she had great difficulty in moving it and was forced to go to bed, where she has been ever since. About this time also, she began to have numbness in her left arm and hand, but she could use this for all purposes.

Personal History.—She was born in Russia, married and has had six children, three of whom died in infancy. She came to Canada sixteen years ago. Six years ago, she states that Dr. Birkett removed polypi from the nasopharynx. When she was in the hospital in 1923, a diagnosis of fibroma of the uterus was made, but removal was not advised. Neurological examination at that time revealed nothing pathological in her nervous system.

Examination of her nervous system on admission showed an almost complete spastic paralysis of both legs and right arm, with increased tendon jerks, bilateral plantar extension, (Babinski's phenomenon) and absent abdominal and epigastric reflexes. There was no complaint of any bladder disturbances, and percussion over the bladder region showed no dullness. In the right lower extremity there was a marked loss of sense of position. In the left limb her sense of position was good. Sensibility to pain, heat and cold was lost in the left leg, left side of the body and on the ulnar side of the left forearm and arm, including the whole hand. On the right side there was a similar distribution of loss of sensibility to pain, heat and cold, but the loss was not at all so complete. In the trunk this loss extended up to the level of the second costal cartilage. X-ray of the vertebrae showed nothing pathological.

The diagnosis was made of pressure on the cord, the upper level of which involved the

sixth cervical segment. From the history of the paralysis involving the right side first, and the loss of sense of position on the right side, with the complete loss of pain and thermal sense on the left side, the pressure was evidently from the right side of the cord, although it had apparently increased recently so as to involve the complete cord. The tests for

impairment of sensibility were not altogether satisfactory owing to the patient's incapacity as a witness; so that on the 11th March, lipiodol was injected into the cisterna magna and after sitting her up for a moment, x-rays of the vertebral column were taken. These showed that the descent of the lipiodol in the thecal canal was arrested at the level of the fourth cervical spinal process (see Fig. 4).

On the 14th March, Sir Henry Gray performed a laminectomy and found that a tumour, about three-quarters of an inch by half an inch was lying inside the theca pressing into the cord from the right side.

After a certain amount of gentle manipulation he was able to remove it, although it seemed to be fairly firmly attached to the dura at one spot. Pathological examination reports it to be a psammoma (see Fig. 5).*

The patient made a good recovery from the operation and already shows definite improvement in the power of movement of the legs and arm. At time of publication sensibility has returned and the patient is walking.

Lipiodol "Lafay" contains 0.54 egm. of pure iodine to 1 eem. vegetable oil. It was first used for this purpose in Paris in 1921 by Drs. J. A. Sieard and J. Forestier. It is opaque to x-rays. It may be injected without pain or other bad results. It is heavier than the cerebro-spinal fluid and therefore sinks to the lowest part. It is necessary to inject lipiodol with the membranous sac distended as much as possible, to allow it to sink freely. No withdrawal of cerebro-spinal fluid should therefore have taken place for some six days previously. The site of election is the atlanto-occipital space into the cisterna, the patient lying on the side, the head slightly raised and bent forward to put the membranes on the stretch. Afterwards let the patient sit up or stand for a moment or longer, before taking the x-rays. As an aid to the localization of pressure on the cord, the advantages are obvious.



FIG. 4 (Case 2)—Lateral view of cervical vertebrae, showing lipiodol (white) arrested at upper level of tumour.

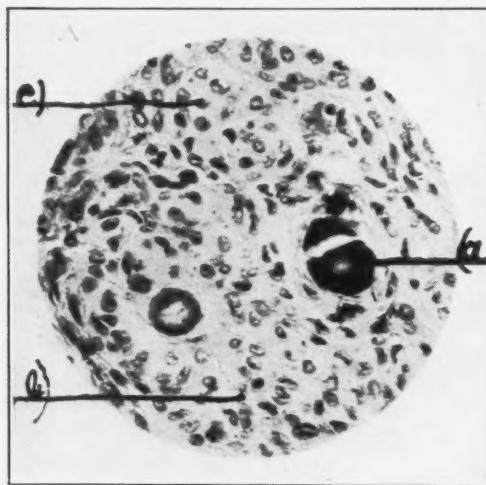


FIG. 5. (Case 2).—Endothelioma of Dura Mater (Psammoma). (a) Calcification; (b) Endothelial cells; (c) Concentric groups of cells (High power).

*I am indebted to Dr. C. T. Crowdy, pathologist at the Royal Victoria Hospital, for this report and the accompanying micro-photograph of the tumour.

Case Reports

FATAL HÆMORRHAGE FROM A DUODENAL ULCER, ASSOCIATED WITH A TOXIC ADENOMA OF THE THYROID GLAND*

PHILIP G. SILVER, M.D.

Demonstrator in Pathology, McGill University

Mrs. U., age forty-four years, was admitted into the service of Dr. E. M. Eberts at the Montreal General Hospital on October 6th, 1924, complaining of "nervousness, rapidity of the heart, and enlargement of the neck."

She was born in Canada and has always lived here. Menses were normal. She has had four full term children, the last eleven years ago. The menopause occurred eighteen months ago.

The family history is of interest inasmuch as her mother, one sister and three brothers all had tuberculosis. There is no family history of goitre.

The enlargement of the neck was first noticed fourteen years ago. There was no antecedent shock or infection. There were no associated symptoms. For a time the patient took thyroid tablets. The swelling remained stationary in size until the early part of last summer. Since then it has increased gradually in size. In April, 1924, she had a sudden attack of pain over the heart, with tachycardia.

Since this attack she has gradually become nervous. In August 1924, she had a second attack of pain in the cardiac region, and since then the tachycardia and nervousness have become more marked. For the three weeks prior to admission, she took an iodine mixture internally, with slight if any, improvement following. She has never had any signs or symptoms suggesting gastric or duodenal ulcer.

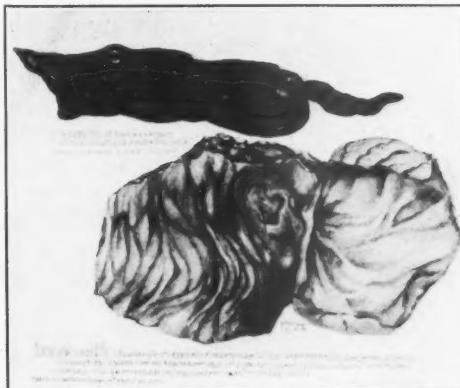
Condition on admission.—Patient is a fairly well developed, under nourished woman, weighing ninety-two pounds. The skin is moist and lungs negative except for a slight impairment of resonance at the left apex.

The pulse is regular and of good volume, rate ninety. There is a transverse cardiac dulness of thirteen cms. No cardiac murmurs are heard.

The right lobe of the thyroid is moderately enlarged and firm in consistency. The symptoms associated with this are tremor of the hands;

slight palpitation of the heart after meals; nervousness, restlessness and irritability; slight heat intolerance; loss of strength; and falling of hair. No eye symptoms are present.

The basal metabolic rate on October 9th. was +40. On October 15th. it had risen to +52. A diagnosis of toxic adenoma of the right lobe of the thyroid was made and operation was decided upon. On October 16th. under local anaesthesia, the right lobe of the thyroid was removed. There was a slight tachycardia following operation, lasting but two days.



Photograph shows:—Duodenal ulcer, with perforation of a branch of the pancreatico-duodenal artery. A wire has been passed into the artery and through the perforation in the central portion of the ulcer.

Blood cast of the duodenum with small tail like process extending into the stomach.

The patient was comfortable and showed marked daily improvement until October 22nd., when she complained of some abdominal pain. Examination of the abdomen revealed nothing abnormal and enemata were effectual. On October 25th, she suddenly fainted at 4 p.m. The pulse was of good volume and slow. At 7.30 p.m. there was a large bowel movement, consisting of black fluid blood. On the morning of October 26th, the day following, she felt weak and looked pale. A diagnosis of intestinal haemorrhage was made. There was a second large blood-stained stool at this time. The pulse was of small volume, rate 150. During the day her condition was serious but not alarming; however she died very suddenly at 9 p.m. There was no elevation of temperature until immediately before death, when it rose to 102 degrees.

*From the Pathological Laboratory of the Montreal General Hospital.

Abstract of the Pathological Report.—A-24-204. Post mortem examination shows operation wound to have healed well by first intention. There are dense fibrous adhesions causing complete obliteration of the left pleural cavity. The left lung shows a small tuberculous cavity three-quarter inch in diameter, containing a thick, white, cheesy material at the apex, and areas of bronchopneumonia in the lower lobe. Enlarged calcified glands are present at the hilus of each lung.

On opening the stomach a considerable amount of unclotted blood is found. There is no sign of a gastric ulcer, and no varices are seen. When the duodenum is opened, a large blood clot is seen. This clot forms a cast of the lumen of the duodenum, and extends as a small tail like process for a distance of two inches into the pyloric antrum. At the pyloric ring the clot shows a definite constriction. The cast extends distally ten inches below the pyloric ring. It is adherent to the duodenal wall at one point only, *i.e.*, one inch distal to the pyloric ring where there is an irregularly oval shaped transverse ulcer, one inch by three quarters in diameter. The edges of the ulcer are sinuous, elevated, rounded and quite firm. The base of the ulcer is clean and in the centre of it a small blood clot is adherent and joins the duodenal cast. On removing the clot, a small probe can be passed through a perforation into a branch of the pancreatico-duodenal artery in the centre of the base of the ulcer. There is a large amount of unclotted blood present in the small intestine below this point and also in the large intestine.

Remarks.—This case illustrates the well known fact that the first symptom of a duodenal ulcer may be fatal haemorrhage. Haemorrhage occurs, according to Osler, in one third of all cases of peptic ulcer and is more common in the chronic form than in the acute. That the duodenal ulcer in this case could have any direct relation to the thyroid condition, for which the patient sought relief, does not seem probable.

A CASE OF INTERNAL HERNIA OF PURELY PATHOLOGICAL ORIGIN*

W. L. BARLOW, M.D., AND

J. O. FRASER, M.D.,

A young girl aged twenty-nine, single, was admitted into the service of one of us (W.L.B.) at the Montreal General Hospital Jan. 4th, 1924,

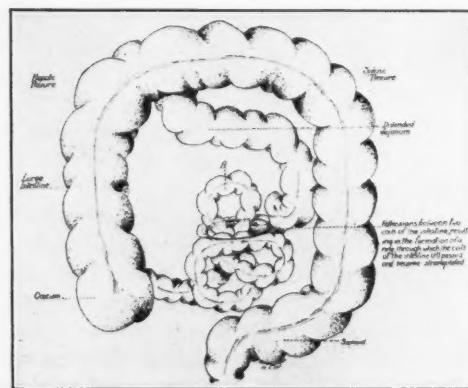
*From the Pathological Department of the Montreal General Hospital.

complaining of (1) severe abdominal pain, (2) excessive constipation, (3) fullness of the abdomen, (4) vomiting.

Family history: Irrelevant.

Personal history: Appendectomy, M. G. H. 1917 for sub-acute appendicitis; otherwise irrelevant.

History of present illness: She gave a history of a sudden onset in that she was quite well until Wednesday night January 2nd. She retired in perfect health, but awoke at three a.m., Thursday 3rd, with a severe generalized abdominal pain, which was of a "steady grinding character", and vomiting. A physician was called. He thought there was a partial intestinal obstruction. Purgatives were given, without results, and enemata were unsuccessful. The pain was so severe that many hypodermics of morphia were required during the following day and night. Twenty-four hours after the onset of the illness, there was a slight cyanosis of her lips and fingers, and at that time there was slight abdominal distension. The patient was admitted to the hospital, thirty-six hours after the onset of her malady.



Diagrammatic drawing of a portion of the gastro-intestinal tract, showing an internal hernia of purely pathological origin. Only a small portion of the small intestine is shown. The arrows from above downward show the normal direction of the fecal stream. The circle outlines the ring through which the intestinal coils (A) passed and became strangulated.

Examination at the time of admission showed the patient to be in a state of marked shock. There was definite cyanosis of the lips, hands and feet. The skin was cold and clammy. The pulse could not be obtained but with the stethoscope the rate was from 150 to 160 per minute. Her cheeks were flushed, nose pinched, and the accessory respiratory muscles were brought into play. Temperature was 100. The blood pres-

sure would not register. The heart was slightly enlarged to the left but inside the nipple line. The heart sounds were weak. At the apex the first sound was accompanied by a soft systolic murmur, which was not transmitted to the axilla. The second sound was almost inaudible. The abdomen which was rounded, and slightly distended, moved equally and freely with respiration. There was no visible mass, distended coils of intestine, nor visible peristalsis. Pain seemed to be generalized over the abdomen, and there was tenderness in the right hypochondrium, which was referred to the region around the umbilicus. Splinting of the muscles was not elicited, but there was a definite increase in the resistance on the left side. A mass was palpable on the right side, the outline of which was indefinite. Palpation caused intense pain and the patient vomited once during examination. The vomitus was uncoloured, contained mucus, and undigested milk curds. There was no faecal odour to it. Throughout the examination there was marked nausea. There was no special tenderness over McBurney's point, no fluid or mass could be felt in the pouch of Douglas through rectal examination, but slight tenderness was made out on the right side anteriorly.

Special examinations: Blood count showed a leucocytosis of 17,900; blood urea nitrogen 25 mgms. per 100 cc.; blood sugar 0.250%; urinalysis, albumen +, sugar +, leucocytes +, epithelium ++, casts +++.

During the two days that the patient was in hospital, her condition improved somewhat. The state of shock subsided more or less, and on the second day the pulse was obtained for the first time. Shortly after admission she was given an s.s. enema with quinine bi-sulphate and turpentine. This was ineffectual but another given five hours later with 1 cc. infundin was expelled with considerable flatus and fairly well coloured. During the first night she had a voluntary bowel movement. A similar enema given with 1 cc. infundin on the second day was expelled with considerable flatus, fairly well coloured, and contained flakes of soft stool. On the second day, she showed slight jaundice, generalized abdominal tenderness and rigidity. Movable dullness became apparent in the abdominal cavity. The blood sugar decreased to 0.158%, but the blood urea nitrogen increased to 48 mgms. per 100 c.c., and the white blood cell count showed a leucocytosis of 26,000. The temperature was 103, and

the pulse 162. A laparotomy was performed, a summary of which follows:

When the peritoneum was opened considerable dark brown fluid escaped, which had a colon bacillus odour, and a loop of small intestine presented. Exploration demonstrated the presence of an internal hernia, strangulated, and a gangrenous condition involving all the small intestine, from ileo-caecal valve to within two feet of the duodeno-jejunal junction. The scar of the previous appendectomy wound was perfectly smooth and there were no adhesions or bands arising from it. There were two broad bands of peritoneal adhesions between the transverse colon, to the left of the mid line, and a loop of small intestine near the end of the healthy part of the jejunum. Opposite this two fairly healthy coils of jejunum were densely adherent to one another, and the lower portion of the ileum could be pulled backwards and forwards for a short distance underneath this constricting loop of the jejunum, but the herniated bowel could not be so reduced. There was no evidence of it having been a volvulus. It appeared as if practically the entire small intestine had herniated through the ring made by the adhesions between the two loops of jejunum. The part so herniated was quite dead. The patient's condition was so desperate that any resection was out of the question. To bring the proximal and distal ends of the intestine up to the wound would have required some time, and owing to the very short length of the jejunum, would not have left the patient sufficient bowel to maintain life. It was considered the most humane act to return the mass into the abdomen, suture up as quickly as possible, and get her back to the ward where she could spend the last few hours with her mother. This was done and she died a few hours later.

The main points at the *post mortem* were: "There was no free fluid in the peritoneal cavity. The peritoneum was of a dirty greenish black colour. The stomach, duodenum, and the proximal portion of the jejunum were greatly distended with gas and fluid. This dilatation ended quite abruptly, where there were adhesions between loops of small intestine. At first sight the intestines appeared to be all matted together by adhesions. When these were separated, it was found there was a dense band of adhesions between coils of jejunum, which resulted in the formation of a ring. Through this ring, of comparatively small size, numerous coils of small intestine had herniated, were swollen, and strang-

ulated. The remaining coils of small intestine, though they did not pass through the ring referred to above, showed necrosis to within a few inches of the ileo-caecal valve. A lead wire was passed into the lumen of the bowel, and the direction of the flow traced out as illustrated in the diagram. It will thus be seen that an internal hernia has resulted from coils of small intestine passing through a ring formed by adhesions, and was followed by strangulation. The coils distal to this were necrotic. The large intestine, which was of normal calibre, showed slight greenish black discolouration, and the sigmoid still less. There were no adhesions in the region of the appendectomy, and there was no evidence of a volvulus.

Remarks: In considering the internal hernia in this case, two important points must be determined. First, was the ring through which the intestine passed the result of congenital malformation, or did it arise from an inflammatory process? In order to determine this Dr. I. MacLaren Thompson, Assistant Professor of Anatomy at McGill University, examined the specimen carefully with us, and concurred in our conclusions. The coil of jejunum, which produced the ring, was united by fibrous tissue similar to that seen elsewhere in the abdominal cavity, and the ring was not in an anatomical position that could be easily explained upon the basis of a congenital abnormality. Besides this there was a source from which the adhesions could have resulted—appendicitis, some years previously. The coils of small intestine, distal to those that passed through the ring, were necrosed as the result of pressure upon the blood vessels of the mesentery, resulting from the weight and anatomical position of the coils that had passed through the ring and become strangulated. The last few inches of the small intestine did not show so much necrosis, as a part of its blood supply comes from blood vessels about the caecum. Internal herniae of purely pathological origin are rare.

A CASE OF DIABETIC COMA TREATED WITH DIOXYACETONE, WITH RECOVERY*

I. M. RABINOWITCH, M.D.

Montreal

J. T., a white female, sixty-five years of age, was admitted to the Montreal General Hospital

*From the Department of Metabolism, Montreal General Hospital.

at 6.30 p.m. on April 17th, 1925, with a diagnosis of "diabetes mellitus in a precomatose state." The patient was first seen at 4 p.m. that day by Dr. Harold Eberts, who obtained a history that glycosuria was discovered five years ago.

At that time she weighed 200 lbs. She apparently did not then follow any form of treatment. Two years ago polyuria, thirst, and loss of weight were first noted. At this time a diet was prescribed but was not strictly adhered to. The above symptoms became progressively more marked, her present weight being about 105 lbs. On the afternoon of April 16th, she complained of feeling very tired and short of breath, and went to bed. Her relatives noted that she was becoming more and more drowsy. When first seen by Dr. Eberts, the drowsiness was marked, but the patient could be roused, was aware of her surroundings, and responded to questions, though slowly. There was nothing in the history obtained from the relatives or in the physical examination to account for an acute onset of coma, such as trauma, infection, etc. The case appeared to be one of chronic diabetes gradually progressing to the stage of coma.

When first seen in the hospital the patient was in the dorsal decubitus position and very stuporous, but could be roused. The typical Kussmaul type of respiration was noted. The pupils were equal, and reacted to light, though sluggishly. Krause's sign (soft eyeball) was marked. The face was flushed. The lips were bright red and dry. The tongue was dry and had the typical angry red "beefy" appearance. The breath had a marked acetone odour. The pulse was of good volume, was rapid (112), and regular in rate and rhythm. Blood pressure 126-68. Emaciation marked. The physical examination was otherwise irrelevant.

Laboratory report.—(a) Urinalysis: Light straw colour; acid reaction; s.g. 1041, marked reduction of Fehling solution; diacetic acid reaction (ferric chloride) marked; albumin, a trace; many granular casts (a shower).

(b) Blood: Sugar 0.416 per cent; plasma $\text{CO}_2 = 18.5$ volumes per cent; urea-N 15 mgms. per 100 cc.; creatinine 1.43 mgms. per 100 cc.

The general clinical appearance, the low CO_2 combining power of the plasma, and the marked diacetic acid reaction of the urine, were typical of diabetes with severe acidosis. The marked forced inspiratory efforts, the soft eyeballs, and

the shower of casts in the urine, indicated the onset of diabetic coma.

An opportunity was thus afforded to test the value of dioxyacetone in the treatment of such cases. A previous report¹ and further studies of the use of dioxyacetone in diabetes show that this chemical compound is more readily tolerated by the diabetic than glucose. When the limit of tolerance for glucose is reached, the diabetic appears to continue to tolerate dioxyacetone. This is suggested by the fact that following its administration there may be noted either only a slight increase or none at all in the degree of hyperglycæmia present, and a rise in the respiratory quotient in the presence of a positive balance (intake greater than excretion). Its caloric and antiketogenic values are approximately those of glucose. Its action differs fundamentally from that of insulin. The disappearance of the acetone bodies after insulin is due to the oxidation of glucose, and the latter disappears from the blood during this process. The disappearance of the acetone bodies after dioxyacetone is due to the oxidation of the dioxyacetone itself. The hyperglycæmia due to glucose may be little or not at all affected. In some cases an actual lowering of the blood sugar may be noted following the administration of dioxyacetone. The excretion of glucose in the urine may also be lessened. Such results, however, are not al-

ways found. No explanation of this phenomenon is offered at present. In the case recorded here a decrease in the excretion of sugar in the urine is suggested. *A definite decrease in the degree of hyperglycaemia was noted.*

An hourly study of the blood and urine was made during the first twelve hours of observation, because rapid results were essential for obvious reasons, and if not obtained the treatment was to be abandoned. The observations at the end of each period consisted of the following:

Blood: Sugar.

Plasma CO₂ combining power.

Urine: Sugar (quantitative).

Acetone bodies qualitative (Ferric chloride).

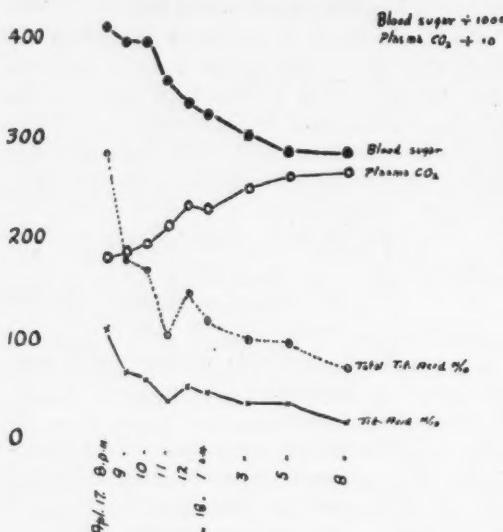
Total titratable acidity (acid plus ammonia).

Ammonia.

In order to obtain comparative data observations were first made upon the blood and urine for one hour prior to the administration of dioxyacetone. The latter was then given in small doses. This method has been found to yield better results than when one large dose is given. The ease with which dioxyacetone may undergo condensation in even slightly alkaline media, probably explains this phenomenon. The combined data obtained are recorded in the following table, and are graphically represented

HOUR	URINE							BLOOD			REMARKS
	Volume	Sugar per cent.	Sugar, gms.	Fe ₂ Cl ₆	Tit. Acid cc N/10	Total Tit. Acid cc N/10 (Acid + NH ₃)	Ammonia gms.	Dioxyacetone qualitative	Sugar per cent.	Plasma CO ₂ combining power	
7-8 p.m.	250	2.70	6.75	+++++	115	290	.24		.416	18.5	Before Treatment
8-9 p.m.	180	2.40	4.32	+++++	72	184	.16	0	.400	19.0	6 gms. Dioxyacetone at 8.15, 8.30 and 8.45
9-10 "	190	2.94	5.58	++++	68	174	.15	0	.400	20.1	6 gms. Dioxyacetone at 9.00
10-11 "	175	2.85	4.99	+++	49	111	.08	0	.357	22.2	9.15, 9.30, 9.45, 10.00
11-12 "	230	2.78	6.39	++	60	152	.13	tr	.340	24.0	5 gms. Dioxyacetone at 11.15 and 11.30
12-1 a.m.	190	3.44	6.54	++	57	125	.09	tr	.333	23.9	5 gms. Dioxyacetone at 12.15
1-3 "	300	3.84	11.52	++	90	216	.18	tr	.312	25.8	2 hour specimen
3-5 "	400	3.51	14.04	++	88	210	.17	tr	.295	27.0	
5-8 "	275	3.57	9.82	+	88	242	.21	tr	.295	27.3	5 gms. Dioxyacetone at 6.00
Total...	1940	....	63.2	....	572	1414	1.17	...	....	....	3 hour specimen
	162	....	5.26	....	48	118	.09	...	....	....	Average per hour after treatment

in the accompanying chart. It will be noted in the chart that where observations were not made hourly, the results were calculated on the hour basis, and thus graphically recorded.



Discussion.—The first result noted at the end of the first period of observation, one hour after administration of dioxyacetone, was a decrease in the degree of acidosis. This is shown by a decrease in the excretion of total titratable acids and in grams of ammonia. The plasma CO_2 combining power was little altered. In spite of the administration of 18 gms. of dioxyacetone during that one hour period, the degree of hyperglycæmia had not increased. Clinically, there was practically no change noted. At the end of the second hour, there was very little further change in the excretion of either acid or ammonia. The plasma CO_2 showed a definite, though slight increase. The blood sugar had not increased though twenty-four grams of dioxyacetone were given during that hour. Clinically the patient appeared to be a little brighter. The respirations were not so laboured. The acetone odour of the breath was still marked. Following this period, it will be noted that there was a definite, though slight, decrease in the degree of hyperglycæmia. The degree of acidosis had gradually decreased. This is shown by the fall in the urinary excretion of acid and the gradual, though definite, increase in the plasma CO_2 combining power. At the end of the twelve-hour period the patient was mentally clear and gave an intelligent account of her

illness. The respirations were only slightly increased. The colour appeared normal. The patient stated she felt well. The breath still had a slight acetone odour, and the urine gave a positive ferric chloride reaction, though of much less intensity. The rate of excretion of sugar had altered only slightly; there was a decrease in spite of the fact that sixty-eight grams of dioxyacetone were given during the period. Only traces of dioxyacetone were detected in the urine.

For comparative purposes, the average values for the data (excretion per hour) are recorded in the last line of the table. It is thus possible to note the difference between the metabolism one hour before and twelve hours after treatment.

At no time during this period did there appear to be an indication, clinically or otherwise, that the treatment should be abandoned. There was a steady improvement. The progress was slow, and it is obvious that much more striking and better results would have been obtained with the use of insulin. The object, however, was to determine whether in the absence of insulin, and other accepted procedures, salines, etc., the diabetic with severe acidosis, would respond to the administration of dioxyacetone.

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The dioxyacetone used in this work was made by Farbwurke v. Meister Lucius and Brüning, Hoechst a Main, under the trade name of "Oxantin." The writer is indebted to the Mallinckrodt Chemical Works, Ltd. for the free supply of this product during this investigation.

A CASE OF SPRUE

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The man whom this story concerns was a Scotchman, forty-nine years old, a mechanical engineer who had spent many years in Cuba overseeing the machinery in sugar plantations. He had had no illnesses of importance and his habits were good and his family history immaterial. He consulted me in April, 1921, and gave the following history.

For more than a year he had lived in the Maritime Provinces whither he had gone after leaving Cuba; and for about twelve months he had noticed sores in his mouth which would remain for about ten days and disappear for about the same time, only to reappear again. They came on the tongue and on the insides of the cheeks, appearing first as small red pimples, later becoming white in the centre and painful, then they would gradually disappear.

About six months ago he began to have a painless diarrhoea which has continued up to the present. He has from four to seven stools daily which are thin, light yellow, frothy and bulky, without pus or blood. The diarrhoea seems to be aggravated by the taking of food and almost always occurs in the early part of the day.

He has lost considerable weight, about twenty pounds in the last six months, his colour has become very sallow, and his strength is much less, and he readily becomes short of breath on exertion. So much for the history.

One was struck by the appearance of this pale, wan, listless, tired looking man, who did not fill either his collar or his clothes, and as he walked into the room he bore the air of a blasted hope.

He was a picture of cachexia. The skin and mucous membranes were pale, the tongue smooth and denuded, the teeth were poor and infected, and on the inside of the cheek were two flat superficial ulcers about one-half a centimeter in diameter, which were slightly tender. The lungs and heart were negative, the abdomen was flat and not tender, and neither liver or spleen was palpable. The nervous system was negative except for some irritability and a general lethargy. The urine was negative and rectal examination showed nothing.

The blood count showed R.B.C. 3,560,000, W.B.C. 4,000, Hgb. 60 per cent. The differential count was, polymorphs 59 per cent, small mononuclears 33 per cent, large mononuclears 7 per cent, eosinophiles 1 per cent. There was some stippling of the red cells and a moderate change in shape. No nucleated forms were seen.

The gastro-intestinal x-ray after a barium

meal, showed a slight cardiospasm but was otherwise negative. A barium enema showed a considerable distension of the large bowel but no other abnormality. The total acidity of the stomach contents after a test meal was 94 and the free HCl. 52. Microscopical examination of the contents was negative. The stool was fawn coloured, very frothy and semifluid, with a very foul odour, and showed blood with benzidine. Bacteriological examination showed nothing unusual, and ova and parasites were absent. Neither from the stool nor from scrapings of the cheek ulcers were monilia found.

Upon the clinical findings of superficial ulceration in the mouth, persistent diarrhoea with frothy stools, cachexia, anaemia and exhaustion, in a man who had lived in the West Indies, and who moreover presented no other good reason for his symptoms, a diagnosis of sprue was made. In this instance the diagnosis would appear to have been confirmed by the results of dietetic treatment.

He was put upon a strict milk diet, receiving at first eight ounces every two hours, increased to ten and later to thirteen ounces. Later one banana daily was added, increased to three daily, and then strawberries (out of season, and to a Scotchman!). On this diet the diarrhoea almost immediately improved and the stools became firmer. Later he was given eggs, fruits, salads and rare beef, and all carbohydrates except the fruits and salads were prohibited.

In one month he wrote me that he had gained five pounds in weight and his diarrhoea had quite disappeared. Some months later he wrote from Scotland that his health was apparently quite restored.

The etiology of sprue is still far from settled, although Ashford makes out a rather strong case for the "Monilia psilosisis" as the infecting agent on the groundwork of a food deficiency. A point of clinical interest is the resemblance in many directions, to pernicious anaemia, even to the blood picture, but the resemblance usually fails in some essential feature.

Sprue is not a disease likely to be seen often in Canada but with a combination of diarrhoea, anaemia and sore mouth, this disease has a right to consideration.

Hospital Notes

At the March meeting of the medical staff of the Regina General Hospital, Dr. W. A. Thomson presented a case of dissecting aneurysm with rupture into the pericardium in a patient fifty years old, who had been well twenty-six hours prior to death, when, in the act of stooping, he fainted. This was followed by successive weak spells, culminating in death. The diagnosis was made at autopsy which showed a perforation from the aorta dissecting down into the pericardium.

Dr. H. C. George presented a case of brain tumour in a man of sixty with a history of total blindness for one year. The diagnosis was made twelve months prior to death by a radiogram which showed a decalcified sella turcica and a definite shadow in the region of the hypophysis; six months prior to death the left eye began to protrude. Autopsy showed a well-defined glioma about the size of an egg with both optic nerves flattened. URBAN GAREAU

A Specific Precipitin Reaction in Epidemic Poliomyelitis—The test employed by Edward C. Rosenow, Rochester, Minn., in suspected cases of poliomyelitis consists of layering the extract in sodium chlorid solution of nasopharyngeal swabbings over the respective serums in small tubes, and noting the presence or absence of a cloud at the point of contact. The test has been applied in a large number of cases of epidemic poliomyelitis and poliomyelitis contacts. A positive reaction was obtained during the early stages of the disease in every undoubted case of epidemic and sporadic poliomyelitis, and in what were considered abortive attacks. In some of these it was slight, and could easily have been missed if illumination had not been strong enough, or if too much mixing at the point of contact occurred in adding the serum. All of the seventeen negative tests were obtained in patients five days or more after onset of symptoms. Positive reactions were obtained repeatedly in some cases, and for as long as forty-four days after onset of symptoms, whereas no positive reactions were obtained in the cases of seven persons who had had poliomyelitis from three months to twelve years previously. In most instances, however, the test was negative after twenty-one days from onset. A late positive reaction was repeatedly obtained in children having a persistent slight fever, attributable to infected tonsils and adenoids. Two persons, both in families in which one other member had previously been stricken, developed severe attacks of poliomyelitis and three abortive attacks

within a week after a positive precipitin reaction was obtained with swabbings from the throats of each. Positive reactions were obtained with material swabbed or expressed from tonsils, with nasopharyngeal washings, with chocolate-colored vomitus in a rapidly fatal case, and in one instance with a filtered extract of the stool. Tests with swabbings from the anterior part of the mouth, saliva, spinal fluid, blood serum and urine were always negative. Positive reactions were obtained with pooled convalescent poliomyelitis serum (all obtained within twenty-one days of onset) in eight of eighteen cases of poliomyelitis, in two of eleven cases of scarlet fever, and in eighteen of fifty-four normal persons in the epidemic zone; while only negative reactions were obtained on twenty-one persons with scarlet fever, and forty-three normal persons outside the epidemic zone. The reaction described appears to be a specific precipitation, resulting from a union between precipitogen in the cleared extract and precipitin contained in the serum. Since the reaction is positive at the onset of poliomyelitis, even before paralysis has developed, the test should find its greatest usefulness as an aid in early diagnosis, and hence in early serum treatment. Since the reaction becomes negative in most cases in from two to three weeks, it may prove a simple means of determining when quarantine may be lifted with safety. Moreover, it may also prove of value in epidemiologic studies of poliomyelitis.

—*Jour. Am. Med. Ass.*, Feb. 7, 1925.

Retrospect

TUBERCULOSIS IN CHILDREN

R. R. STRUTHERS, M.D.

According to Bartlett and Wollstein¹ the various manifestations and pathological attributes of this infection are essentially the same in childhood as in adult life, excepting that in infancy more than in older subjects, tuberculosis is more apt to affect every tissue and organ of the body. The resistance of the infant to tuberculosis is low, and as a rule the younger the infant the more generalized does the infection become. The gross and microscopic anatomy of the acute lesions found differ in no essential from those of older patients. The real difference lies in the fact that practically all the lesions seen at autopsy in children under two years are acute; fibrosis is unknown and calcification rare. Healing does not occur and no encapsulated lesions are found. The disease may be acquired before or during birth through the umbilical vein; but in these authors' experience 82 per cent of children under three years of age gave evidence of acquirement through the respiratory tract. The primary lesion is found more often on the right than on the left, and in the upper or middle lobes more frequently than in the lower.

The significance of positive tuberculin skin tests is set forth as follows: in infants under six months without symptoms over 75 per cent will develop clinical tuberculosis within the first year of life: between six and twelve months without symptoms or signs, 50 per cent will develop tuberculosis within the year: between one and two years from 25 to 50 per cent will develop the disease. In the first two groups this is considered as tantamount to saying that these children will die within the first year. The last group has a better chance to escape a fatal outcome.

Bell² does not take quite so dark a view; he considers that only during the first year of life does a positive tuberculin reaction signify active tuberculosis. In the second or transitional year, while a positive reaction must be viewed with great respect, it does not necessarily, but probably, signify an active lesion. Following this

period a negative reaction means much, but a positive reaction indicates only the presence of a tuberculous focus, not the presence of disease. He also considers that tuberculosis is not as frequent, nor as fatal a disease, as is commonly supposed. If it is of the hilus type a complete cure may be expected if proper treatment be instituted.

Dunham³ believes that in the vast majority of cases of pulmonary tuberculosis the bacillus enters the air passages with soot and dust, and is carried into the smaller bronchial subdivisions beyond the ciliated epithelium as far as the ductulus alveolus and the ultimate lobule. From there it is taken by the large phagocytes before the bacillus has caused any infection at its point of lodgment and is carried to the lymphoid tissue. If neither the phagocyte nor the lymphoid tissue is able to destroy the invader, or if the lymphatics cannot sufficiently drain the part, a tuberculous lesion develops in, or near, the lymphoid centre, followed by necrosis, caseation and the formation of cavities.

Parrot's law, set down in 1876, to the effect that bronchial gland tuberculosis is dependent upon a primary focus in the lung and the involvement of regional lymph nodes (that is, in the immediate neighbourhood of the primary focus), and with it the inhalation and aspiration theory, are generally acknowledged to-day. Parrot and his pupils were of the opinion that the primary focus in the lung is caused by direct inhalation and aspiration of tubercle bacilli. This view is also subscribed to by Albrecht, Ghon, Ranke, Beitzke, Hedren.

Contrary views are held by Lubarsch and Ito⁴ who found, in a series of cases, the primary focus in the tonsils. According to some authors (Aufrech, Bortel, Spieler, Weichselbaum) the tubercle bacilli, after having reached the cervical glands, arrive directly, by way of the lymphatic pathways, at the bronchial glands and then the lungs. Beckmann, Grober, Wassermann believe that the bacilli reach the pleura from the tonsils as portals of entry, by way of the cervical glands. Beitzke and Mast have shown experimentally that the infection is

spread to the adjacent lymph nodes from a primary focus in the lung, disproving the theory of primary infection of these glands. The primary focus is always in an older state of pathologic development than the lymph nodes. This fact is also a proof against the theory of haematogenous transmission. While haematogenous infection is possible it is contrary to pathologic-anatomical facts; as Aschoff stated in 1921, there is only one mode of tuberculous infection of the lungs in children, and that is by way of the lungs themselves. So far as the primary lung focus is concerned, in the majority of cases the disease process ceases quickly. The focus is surrounded by tissue containing epithelioid cells and is quickly transformed into scar tissue. The caseous centre shows an extraordinary tendency to calcification, which forms the end stage of the process. Such circumscribed calcified foci also occur in the regional lymph nodes. The infected lymph nodes may enlarge, become caseous, and then liquefy.

MacGregor⁵ concludes a study of autopsy material with some interesting observations. There is a very pronounced tendency for infection to become widely disseminated by the blood stream when the thoracic glands are extensively caseous. In the absence of disease of the thoracic glands impairing the defensive power of the lungs, a much more massive infection of the blood would be required to set up widespread miliary tuberculosis than would be the case in the presence of such disease. This may explain the comparative infrequency of miliary extension from caseous cervical or abdominal glands in the absence of disease in the thoracic group: further it is shown that foci would be much more easily established in the lungs when the pulmonary lymphatic apparatus is disabled by tuberculous disease in the glands, than when this most important defensive mechanism is in full health and efficiency. It also appears that tuberculosis of the mesenteric glands tends chiefly to spread by the lymphatic system locally in the abdomen and extends by the blood stream much less constantly than does tuberculosis of the thoracic glands. Nutritional and degenerative changes attributable to the action of tuberculous toxins are more constant and severe in the abdominal form.

Sauer⁶ presents a very concise summary of the present conception of immunity and prophylaxis in tuberculosis. He states that the diagnostic tuberculin test and the necropsy table have disclosed two indisputable facts—firstly: that most individuals become infected with the tubercle bacillus sometime before puberty; secondly, that relatively few die of the disease in spite of the presence of tuberculous lesions in over 80 per cent of autopsies. That is, the infection heals and the immunity thus acquired protects against subsequent active disease. If the virulence is overwhelming, the invasion too massive or continuous, the immune body production fails to keep pace and the disease spreads. If the immunity just suffices to arrest the disease, the latter may lie dormant until some inhibiting factor interferes with immunity production, when a rerudescence occurs. Among such inhibiting factors may be mentioned intercurrent disease, insufficient food, poor air, lack of sunshine, great physical strain and massive infection with the bacillus. He concludes that there are three main sources of infection, tuberculous dairy products, a contaminated environment, and the tuberculous individual himself. The prophylaxis as regards the child is obvious.

Bernard and Vitry⁷ protest against the prevalent assumption that glandular disease in school children is necessarily tuberculous. In 400 children repeatedly examined with serial tuberculin tests under x-ray control there was a group of 194 with unquestionable enlargement of the glands. The x-ray and physical findings were repeatedly negative in sixty-four, although nearly all in this sub-group had been classed as tuberculous. In fifteen the supposed adenopathy had vanished on re-examination soon afterward.

Cough is a frequent symptom, though not universally present. In infants under two years it may be of a peculiar ringing, metallic character, and is said to be due to stenosis of a bronchus by a small gland.

Marfan⁸ maintains that when a young child's cough is composed of two distinct, simultaneous sounds, this is always a *sign of tuberculous glands in the tracheo-bronchial region*. The cough is not paroxysmal or protracted, and the child's crying does not show this bi-tonal character. The double sound cough is not only a

certain sign of tuberculosis in the bronchial glands but it indicates compression of some organ in the mediastinum and so is important for prognosis. It is somewhat similar in character to the brassy cough of aortic aneurysm. Bouts of coughing, similar to that seen in whooping-cough, are occasionally found in older children, due to pressure on the vagus. Attacks of unilateral bronchitis, due to irritation of the bronchi of a tuberculous nature are met with, and genuine attacks of asthma.

The clinical signs described are several.

1.—D'Espine's sign (1907). Of this sign Much⁹ says: "We let the patient pronounce the number thirty-three as distinctly as possible, while we auscultate the vertebral processes successively from above downwards. We hear the number plainly in the healthy child down to the seventh cervical vertebra. Here the lungs begin. In swelling of the bronchial glands the voice with the characteristic tracheal sound can be heard still further downwards, even to the fifth thoracic vertebra. The swollen glands which are situated here and surround the trachea and the large bronchi extend to the vertebral body and conduct the sound. The number thirty-three may be whispered or pronounced loudly and distinctly. In later years the limits are found somewhat further downwards:

7th year	7th C
8th year	D 1
8th to 12th years	D 11
15th year	D 111

A further extension downwards is abnormal."

Of this sign Morse¹⁰ says that the true sign, as originally described by D'Espine is a whispering sound following the spoken voice (oh!) and heard over the spinous processes. The bronchial character of the spoken voice does not normally extend below the seventh cervical spine (in which he is in agreement with Mueh): extension of the bronchial respiratory sound and of percussion dulness, of which more hereafter) below C VII are still later and grosser signs and signify more marked changes. It seems probable that this whispering sound after the spoken voice is often the earliest and only abnormality.

Floyd's⁴ in *Nelson's Living Medicine*, defines this sign as a prolongation of the whispered voice sound below the first thoracic vertebra, called by some a "postphonal sound."

2.—Eustace Smith's sign (1875), which may be described as a venous "hum" or bruit heard over the root of the neck, produced, according to Still¹¹, by the bending back of the head, tilting forward the lower end of the trachea with its adjoining glands which are then made to compress the left innominate vein. This sign in conjunction with others may be of value, but

of itself is regarded by most authorities as of little worth. The venous hum is heard in conditions of anaemia in children, and may be absent in cases of undoubted enlargement. Other unusual signs mentioned are irregularity of the pupils and engorgement of the superficial thoracic veins.

3.—Percussion. Normally according to Morse¹⁰, dulness on percussion over the vertebral spines stops at the same level as the bronchial sound of the voice and breath sound, namely the seventh cervical. Dulness below this level is pathological. Mueh⁹, on the other hand, lays stress only on a sudden change in percussion resonance, on percussing the spines from above downwards. Paravertebral and parasternal dulness are apparently about of equal value, are difficult to ascertain, and are found definitely only when extensive pathological changes have occurred, which can be assured by other signs mentioned. Riviere⁴ speaks of the constancy with which the percussion note in the interscapular (paravertebral) region is impaired in chronically enlarged glands. He states that this impairment is an "early" sign (contradicting Morse) of tracheobronchial enlargement due to tuberculosis and occurs on the right side only. He has noted the relative infrequency on left sided impairment in the early stages. Where there is right sided glandular involvement the area of paravertebral dulness often extends outwards two or three inches from the median line and as low as the eighth dorsal spine.

Brinchmann¹² states that skepticism rather than confidence increases with the years regarding x-ray findings in children. Only four points are certain to date: normal glands, or freshly enlarged glands, cast no shadow; but caseous and opaque and calcified glands cast a distinct shadow. The shadow of tracheobronchial glands usually falls inside the shadow of vertebrae and thus escapes detection, and the left hilus glands are masked by the heart shadow. The right hilus glands may be masked by vessels and bronchi absorbing the rays, and dappling the roentgenogram even in normal conditions.

Fraser and McRae¹³ warn against the tendency to read tuberculosis into x-ray films showing large hilum shadows, unless other infections, such as chronic appendicitis, diseased

tonsils and teeth, etc. (which cause a reaction in the lymphoid tissues) can be excluded.

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THE ARTIFICIAL FEEDING OF NORMAL INFANTS WITH SWEET COWS' MILK*

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Is boiled cows' milk as conducive to good health and growth in normal healthy infants as fresh unboiled milk?"

The above question was asked by a correspondent in a recent letter to the Editor, with the suggestion that it be answered through the columns of the *Journal*. In a general way the reply is in the affirmative. It is the belief of most paediatricians that any disadvantages, mostly theoretical, resulting from the boiling, on the constituents of cows' milk are far outweighed by the actual advantages in purity and ease of digestibility.

In the teaching of students three simple rules may be laid down for the artificial feeding of infants past the nursing age, one month or more. They are taken from a recent series of articles by Abt, published in the *Journal of the American Medical Association* (1923). The infant requires:

1. From 2 1-2 to 3 ounces of fluids per pound per day.
1. About 1 1-2 ounces of cows' milk per pound per day to supply the necessary amount of protein.
3. Forty-five to fifty calories per pound per day for the normal weight for the age.

*Written at request of a member of the Association and a reader of the *Journal*.

That is, a normal three months old baby, weighing ten pounds, needs:

10 x 2 1-2 ounces of fluid in the day's feeding.
10 x 1 1-2 ounces of milk to supply the protein—this also supplies the required amount of fat calcium and phosphorus. 10 x 45 calories will supply total feeding for a day. This may be obtained from 15 ounces of milk which will yield 300 calories with the addition of 1 1-4 to 1 1-2 ounces carbohydrate which will supply 150 to 180 calorie.

Thus the feeding formula would read:

Cows' milk 15 ounces,
Diluent 10 ounces,
Carbohydrate . 1 1-4 ounces to 1 1-2 ounces.

Of this 5 ounces every 4 hours with five feedings or 3 1-2 ounces every 3 hours with seven feedings.

In the artificial feeding of infants it is now generally accepted that, at least in large centres of population, all milk should be pasteurized, or of a known standard of purity, i.e., certified. The advantages of boiling lie, not only in the sterilization of the milk as regards bacterial life, but also in the greater ease of digestibility. The work of Brenneman (Abt's Pediatrics ii 653) puts this beyond a doubt. After the boiling of cows' milk, the protein is coagulated in the infant's stomach in much smaller and more flocculent curds, than when given raw. After coagulation milk is essentially a semi-solid substance and the digestive juices perform their work only on the exterior of the mass. The greater the surface for them to act upon the more rapid and complete is digestion. Hence the more complete and more rapid emptying of the stomach. Alkalization performs much the same object, causing smaller curds in the stomach, but has the disadvantage that, due to the alkali, it takes longer for the stomach contents to reach the optimum acidity for gastric digestion to proceed, hence digestion and the emptying time of the stomach are prolonged. As the alkali content or "buffer value" of cows' milk is already much higher than breast milk, which is the infant's natural food, it would seem that our ideas on the alkalization of cows' milk should be revised in favour of boiling or acidulation.

Marriott (Notes on Infant Nutrition) says: "Contrary to a former belief by many, the protein of cows' milk is as well utilised as that of human breast milk, and the amount of nitrogen retention is practically the same for both."

Again farther on, regarding boiled milk he says: "Boiling of milk for five minutes serves much

the same purpose as pasteurization. Furthermore the boiling of milk destroys certain toxic bacterial products which might lead to gastrointestinal disturbances. Boiled milk is more easily digested by infants than is raw or pasteurized milk and is very much less likely to lead to diarrhoea or other digestive disturbances. Boiling of milk does not destroy the vitamines, except some of the anti-scorbutic vitamine. This vitamine is readily supplied by the addition of orange juice or tomato juice in the diet. Constipation is hardly any more frequent in babies fed on boiled milk than in those fed on raw milk, but diarrhoea is much less frequent."

According to Brenneman barley water due to its colloidal property, has a similar effect to boiling, on the formation of curds in the infant's stomach, helping to make the curd smaller, softer, and more flocculent, as well as supplying a small amount of nutrition, about two calories per ounce. It was formerly believed that very young infants were unable to digest starch. However, recent work has shown that even newborn infants have present a certain amount of starch splitting ferment, and experience has shown that very young infants handle barley water very well. (Von Reuss). Regarding the effect of boiling on the vitamine content of the cows' milk it has been shown according to Brenneman that there is comparatively little damage, in fact less than that caused by pasteurization. The amount of fat soluble A vitamine is apparently sufficient

as failure of growth does not occur with cows' milk feedings. "B" and "C" are added easily in the form of tomato juice, or orange juice; though infants have been fed for some months on milk, first pasteurized and then boiled, without showing signs of vitamine deficiency, and "factor x" is insufficient in cows' milk to prevent rickets in many cases in this climate. Hence cod liver oil should be added to the diet of all artificially fed and many breast fed infants after the second winter month. According to Hess it would seem that milk that has been boiled is less apt to induce scurvy, than milk which has been pasteurized. Brenneman quotes Lane-Claypon, who investigated this very question for the Local Government Board of London, "Such small differences as have been found in the nutritive values of raw and of boiled milk have been in favour of boiled milk."

From the above it is a proper conclusion that fresh boiled cows' milk is more conducive to good health and growth in normal healthy infants than fresh unboiled milk for two reasons, (a) boiling destroys practically all pathogenic organisms and up to the present is the only reliable measure that does so, (b) due to the effect on the formation of curd, boiled cows' milk is easier to digest than raw milk. "The problem of feeding becomes measurably simpler with boiled milk, and one can always proceed more quickly to larger amounts of greater concentration than raw milk." (Brenneman).

Acrodynia—J. B. Bilderback, Portland, Ore., regards it as questionable whether the disease that American writers are calling acrodynia is the same as the one which occurred in epidemic form in France in the year 1827, and within two years had attacked between forty and fifty thousand people. The term acrodynia (derived from two Greek words, meaning extremity and pain) was first given by Chardon in 1830 to this epidemic disease. Acrodynia, or epidemic erythema, is a disease largely affecting adults and is characterized by an erythematous dermatitis especially affecting the palms and soles and followed by pigmentation. It is also followed by vomiting and diarrhea and frequently by cramps and spasms of the muscles, sometimes by paralysis of the legs and general ana-

sara. It generally runs a course of from two to four weeks, and recurrent attacks are not uncommon. The condition termed acrodynia in the United States occurs sporadically and only in infants and young children, and differs greatly in its clinical course from the disease described by the French writers. However, the name is being used in recent medical literature and will probably stay. It is a smooth sounding word and easy to remember, though not particularly descriptive. It is a disease of the skin and the nervous system involving the vasmotor centres, the motor and the trophic nerves, but affecting particularly the sensory nerves. Bilderback has seen twenty cases and gives a concise review of the clinical picture.—*Jour. Am. Med. Ass.*, Feb. 14, 1925.

Editorial

INFANTILE PARALYSIS AND CEREBRO-SPINAL INFECTIONS

THE disease formerly known to us under the name of infantile paralysis, and to which attention was first directed by Heine in 1840, has been gradually acquiring increased importance. From a disease whose sporadic manifestations were confined almost entirely to infancy and early childhood, and whose pathology was thought to be limited to the anterior horns of the spinal cord, it has assumed the character of a much more extensive infection, and has of late years developed into serious epidemics. Its original name of infantile paralysis became obviously inappropriate when it was recognized that the disease not infrequently attacked young adults; thereupon the pathological name of anterior poliomyelitis was substituted. Still later cases were observed in which the lesions were found not only in the anterior horns of the cord, but in the medullary centres, and in not a few cases even the cerebrum itself was attacked, so that in a recent work Lovatt and Jones have adopted the somewhat cumbersome title of anterior poliomyeloencephalitis. One of the earliest writers to report the disease assuming an epidemic character was Medin who in 1896 published the account of a definite epidemic occurring in a small village in Sweden. Sporadic cases in which it was difficult to trace the source of the infection continued to be reported throughout Europe and in England. An extensive epidemic took place in the State of Vermont in 1894 in which 132 cases were reported as occurring in the course of a few months. Since then thirteen epidemics of importance have been recorded and tabulated by Jones and Lovatt in their recent work on Orthopaedic Surgery. The last of these epidemics was the appalling outbreak in the City of New York in 1916, in which 13,000 persons were attacked and the

death rate exceeded twenty-five per cent. Appalling as such mortality is, equally saddening is the crippled state of more than fifty per cent of those who hold on to life.

The infectivity of the disease has been established beyond doubt although the micro-organism which appears to be a filter passer has not yet been isolated. The mode of dissemination would appear to be through the upper respiratory passages where it may produce few symptoms but pass through the lymphatics and reach the central nervous system, or may lurk and give rise to the carrier phase of the disease. Infection, however, by the gastro-intestinal route cannot be dismissed. No acceptable explanation has yet been offered for the localization of the epidemics in certain districts. We publish in this issue a very interesting account of such an epidemic which occurred in the province of Saskatchewan.

Few diseases give the practitioner more anxiety than do diseases of the cerebro-spinal system. Too frequently there are few premonitory symptoms to warn parents or practitioners of the severe trouble impending. In less severe cases the only symptoms may be those of moderate fever and slight malaise. Patients in the out-patient room have stated that "the child went to bed well, and woke up paralysed". In not a few cases no previous constitutional disturbance could be elicited. Every practitioner, therefore, should be on the watch, especially during the third quarter of the year, and with young children bear in mind the possibility of the development of this disease. Complete rest should be prescribed as a precautionary measure. The tendency of this disease to recur in increased frequency in cycles of four or five years has been referred to by many writers. Very recently at the International Confer-

ence on Health Problems held last year in Jamaica under the auspices of the United Fruit Company, Dr. M. J. Rosenau again emphasized this tendency in the manifestations of the disease as noted in Massachusetts.

In the Milroy lectures on "Epidemic Diseases of the Central Nervous System" Dr. A. S. McNalty calls attention to the many points of similarity between the three diseases, acute poliomyelitis, cerebro-spinal fever, and encephalitis lethargica. So much is this the case that not infrequently the clinician may find it hard to make a differential diagnosis. Epidemics of cerebro-spinal meningitis have frequently been confounded in the past with those of acute poliomyelitis, and acute poliomyelitis has been mistaken for cerebro-spinal fever; Osler for a time held the view that encephalitis lethargica when it first appeared was a cerebral form of poliomyelitis. While each of these diseases is now regarded as an independent entity, resemblances indicate that they belong to the same epidemiological family tree, and the study of one disease may make clear the epidemic character of others. They all occur in epidemic periods or cycles; the organisms of each disease appear to be always present in countries which have been affected by previous outbreaks of these diseases as evidenced by the presence of sporadic cases from time to time. In this way the strains of the causal organisms are kept in circulation throughout the community. Regarding the origin of these diseases we are still in the dark. It is suggested that these organisms previously mere saprophytes may gradually have assumed pathogenic powers; and it has further been contended that the central nervous system of man today is more subjected to fatigue and strain than in the more leisureed centuries of the past. The virus of the disease is apparently exalted by increasingly frequent passage through susceptible individuals, an exaltation favoured possibly by unusual variations in seasonal temperature, and, by other factors which may lower the defensive powers of the human organism. It may be assumed that in epidemic

periods the viruses of these diseases are widespread among the population of the area affected. This has been proven for cerebrospinal fever and acute poliomyelitis, and the assumption appears equally true for encephalitis lethargica. All three forms resemble one another in that they give rise to mild and abortive types which often pass unrecognised and which have all the potentialities of disseminating the epidemics in their gravest form. Another characteristic of these diseases, but an encouraging one is the fact that they conform to the behaviour of other epidemics in waning as well as waxing, and appear in this matter to be much influenced by seasonal variations. While in these many respects these diseases resemble one another, it is also evident that they possess independent epidemiological characters, a difference which is well marked in their age incidence, seasonal incidence, and mortality. Acute poliomyelitis is most frequently met with under five years of age; cerebro-spinal fever between five and ten years; and encephalitis lethargica at the middle period of life. As regards seasonal incidence encephalitis lethargica is met with most frequently towards the end of December and continues during the first quarter of the new year. Cerebro-spinal fever is met with most frequently in May, and acute poliomyelitis most frequently in the autumn months, from September to the middle of November. As regards mortality the highest mortality is met with in cerebro-spinal fever in which the rate in England and Wales for the year 1919 was over sixty-seven per cent; encephalitis lethargica during the same period had a mortality of fifty-five per cent; while that of acute poliomyelitis was between fifteen and twenty per cent. At the close of his lecture Dr. McNalty calls attention to the increasing prevalence of acute poliomyelitis and of encephalitis lethargica; cerebro-spinal fever however he considers to be at the present diminishing in frequency. He emphasises the fact that the mildest form of epidemic encephalitis may be followed by most serious after effects which may cripple the in-

dividual mentally or physically for life. Unfortunately the way in which epidemic nervous diseases are transmitted makes the application of the ordinary administrative measures for limiting acute infections to a large extent nugatory. One ray of light is the fact that many persons are known to be insusceptible to their infection. In the case of poliomyelitis Amoss and Taylor (*Jour. Experimental Medicine*, April 1, 1917, p. 507) have shown that certain bodies existing

in the nasal secretions of certain individuals appear to be protective against the virus of that disease. If these protective substances are rarely found or are absent in young children this circumstance may account for the stress of the disease in young life. Dr. McNalty suggests that a closer study of the problem of susceptibility to infection may be an important means of acquiring success in coping with these epidemic diseases of the central nervous system.

THE FUNCTION OF THE SCROTUM

THE migration of the testis from the abdominal cavity is a phenomenon not without parallel in vertebrate development: the heart, for example, descends into the thorax from the region of the throat; the lungs originate in the abdominal region; the kidneys move up from the lower lumbar segments. These alterations in position can be reasonably accounted for on mechanical grounds, but the descent of the testis admits of no such ready explanation. From both physiological and biological aspects the problem is difficult of solution; according to Herbert Spencer:

"Neither direct nor indirect equilibration accounts for this (descent). We cannot consider it an adaptive change, since there seems no way in which the production of sperm cells, internally carried on in a bird, is made external by adjustment to the changed requirements of mammalian life. Nor can we ascribe it to the survival of the fittest; for it is incredible that any mammal was over-advantaged in the struggle for life by this changed position of these organs. Contrariwise, the removal of them from a place of safety to a place of danger would seem to be negatived by natural selection. Nor can we regard the transposition as a concomitant of re-equilibration, since it can hardly be due to some change in the general physiological balance."

Such reflections, however, are mainly academical in nature. A point of practical importance arises when the testicle fails to descend, either completely or otherwise, for then it is generally aspermatic. It is important to determine whether imperfection in the organ causes the arrested descent, or whether the

failure to descend causes an imperfection. Surgical intervention will be useless in the first instance, but may be well worth undertaking in the second.

John Hunter was inclined to suspect that the fault originated in the testes themselves:

"It is not easy," he says, "to ascertain the cause of this failure in the descent of the testicle This, however, is certain, that the testicle which has completed its descent is the largest, which is more evident in the quadruped than in the human subject; as in these we can have the opportunity of examining the parts when we please, and can determine how small in comparison with the other that testicle is which has exceeded the usual time of coming down; it never descends so low as the other."

"When one or both testicles remain through life in the belly, I believe that they are exceedingly imperfect, and probably incapable of performing their natural function, and that this imperfection prevents the disposition for descent from taking place."

And this is a point of view shared by authorities such as Keith and Bland-Sutton.

On the other hand, there is reason for supposing that the failure of the testes to reach the scrotum may be responsible for their incomplete development. Certain arguments have been presented by Dr. Crew, of Edinburgh,¹ supporting the view that the scrotum has a definite function to perform in regard to the testes, inasmuch as it provides that they shall be kept constantly at a temperature lower than that obtaining in the abdominal cavity. He points out that there is

a marked difference in temperature between the scrotal sac and the peritoneal cavity, a difference great enough, in his opinion, to be a determining factor in causing the final stages of spermatogenesis to be effected in the one situation and not in the other. Moreover, the anatomy of the scrotum indicates specialization for the regulation of local temperature. There is the position of the scrotal pouch, standing well away from the body and allowing for the maximum of transpiration; the very thin skin; the underlying dartos muscle—capable of so delicately altering the cutaneous area—and the marked absence of fat in the underlying areolar tissue. It is significant that in a castrated animal the scrotum is loaded with fat, so much so that it provides the butcher with a standard by which to judge a prime beast. Finally, it is said that in diseases which cause the scrotum to become thickened and inelastic, e.g., elephantiasis, the testes become deformed and atrophied.

The question, however, has more lately been approached by experimental methods. Professor Carl Moore,² of Chicago, has experimented on animals with regard to the physiological properties of the gonads, and has brought forward evidence which strongly supports Dr. Crew's views on the thermo-regulatory function of the scrotum. He has shown, for example, that if the testis be transferred to the peritoneal cavity, the effect on the spermatogenic cells is rapidly fatal, and the more advanced the development of the germinal epithelium at the time of the experiment, the more complete is the final disorganization. If, however, the testis was allowed to descend into the upper part of the canal, it was found that the side in contact with the walls of the

scrotum, showed normal tubules, whilst the side projecting into the upper part of the canal had become completely degenerated. Still more strikingly was this effect brought out by placing one testicle entirely in the peritoneal cavity and allowing the other to occupy the halfway position, for then, eventually, the totally retained organ showed complete degeneration as against the partial disorganization of the other whose lower segment had been within the canal.

It was also possible to show that testes replaced in the abdomen and allowed to degenerate to a certain extent, would, on being returned to the scrotum, show a marked if not complete regeneration of the germinal epithelium.

The scrotal pouch, then, has a more than passively receptive relationship to the testis, and Dr. Moore believes, with Dr. Crew, that the function underlying this relationship is that of maintaining a certain temperature. For it can be shown experimentally that the temperature within the scrotum is lower than that within the peritoneal cavity, and further that the amount of difference varies with the temperature of the environment. A direct proof of the effect of interference with the normal scrotal temperature was given by an experiment in which the testes of a sheep were insulated with layers of wool and waterproof material, and kept so covered for eighty days: at the end of this time there was a marked degeneration of the seminiferous tubules. Bathing of the scrotum constantly with water of a temperature seven or eight degrees centigrade above the body temperature, gave rise to similar degeneration.

H. E. MACDERMOT

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PARATHYROID EXTRACT IN THE TREATMENT OF SPRUE

THE report of Dr. Gordon's case brings to mind the important work which has recently been done by Scott in regard to this disease. He was impressed, when

treating cases of sprue, by the occurrence of symptoms suggestive of tetany. In consequence of this he treated a number of cases with calcium and parathyroid

extract. The results were most encouraging, producing improvement and sometimes permanent cure in the most obstinate cases. Further investigations led him to determine the calcium content of the blood in such cases. He found that in distinction to what occurs in normal cases where all the calcium of blood exists as free calcium, although the total calcium content of the blood was normal there was a considerable amount of it as combined calcium, while the free calcium was deficient. On treatment with parathyroid extract the balance returned to normal.

This work of Scott's is of first importance as it not only clearly points to a probable causation and cure of sprue, but its bearing on other conditions of diarrhoea of unknown cause may be productive of further knowledge. Scott has now recorded a large number of such cases some of which have shown an apparently permanent cure.

JONATHAN MEAKINS

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ULTRA VIOLET RAYS

IN an interesting address on Ultra Violet Rays delivered before the American Association for the Advancement of Science, (*Jour. Am. Med. Ass.* April 4, 1925.) Dr. Alfred F. Hess places before us some interesting facts in regard to these rays whose importance in medicine has just begun to be appreciated. The action of these rays, as distinct from the visible radiations of the sun, has been known for many years, but physiologists have only recently become alive to their significance in relation to normal and pathological conditions in man. Some twenty years ago the physiologist Hertel carried out some striking experiments which demonstrated the power of these rays to rapidly destroy bacteria. About the same time Finsen showed that the improvement or cure of lupus could be brought about by irradiations from the carbon arc lamp, and that this effect was chiefly due to the ultra violet ray. It was not, however, until it was shown objectively in man and animals that a nutritional disturbance—rickets—was due to the lack of ultra violet solar rays, and could be either prevented or cured by these ultra violet rays that special attention was directed to them. These rays constitute less than one per cent of the total solar radiations, and it is therefore remarkable that they should prove

to be so essential to the well being of man. The young infant thrives better when deprived of the visible rays, than when deprived of these short ultra violet rays. The action of these rays may be interfered with by many conditions as they possess little power of penetration; dust or moisture in the atmosphere absorb them and prevent them reaching the surface of the earth; so that mist, fog and smoke intercept them, and prevent their action. Ordinary window glass filters out all but the longer and less potent of these rays, allowing the passage only of denatured sunlight, a light however which still retains all the semblance but little of the beneficence of the sun's rays. Experiments on the physiological action of these rays have been numerous and varied, but have as yet yielded very few definite results. It has been shown that these invisible rays lead to an increase of the lymphocytes in the blood and to the formation of pigment in the skin. Rabbits exposed to the ultra violet rays of the mercury lamp show hypertrophy of the parathyroid glands. Rickets has been shown to be due to a disturbance in the mineral metabolism of the child, as manifested by an alteration in the structure of the bone, with a diminution of the inorganic phosphorus and calcium of the blood.

Both of these abnormal states are rectified when the infant or animal is exposed to the sunlight or to the ultra violet radiations from an artificial source.

In considering the ultra violet rays in sunlight we must bear in mind that there are marked diurnal and seasonal variations in this portion of the spectrum. Ultra violet rays are weak in the early morning and evening, and of the greatest intensity between the hours of ten a.m. and one p.m. There is therefore a marked and important difference in the quality of sunlight. Radiations about twenty millimicrons shorter are furnished as the sun climbs from ten degrees to sixty. The seasonal fluctuations are still more striking. The amount of radiation containing effective violet rays is small during the winter months, and it has been demonstrated that the actual therapeutic power in the sun's rays is not altogether dependent upon the amount of actual sunshine. The dominant factor in relation to the activity of solar ultra violet rays is not

their quantity but their quality. The results of heliotherapy during the winter have been disappointing owing to the fact that the amount of the short ultra violet radiations, which alone are of value in preventing rickets, appear to be very limited during the winter season, as well as owing to the fact that infants cannot be exposed directly to the rays on account of the severity of the climate. The most promising prophylactic measure during this season is the employment of ultra violet rays from artificial sources, and the use of cod liver oil and possibly other foods which have been increasingly activated by irradiation. In connection with rickets and irradiation, it has also been suggested that much may be accomplished by improving the hygienic conditions of milch cows. At present many of those furnishing what has been regarded as the best grade of milk are kept throughout the year in sunless barns, and receive only a limited amount of exercise with little or no green fodder.

LIME DERMATITIS

AMONG the several forms of industrial toxication to which attention has been drawn in Dr. Henderson's paper which we published last issue, no reference was made to the fact, which has been emphasized by Dr. W. I. O'Donovan, in a recent number of the *Lancet* (March 21, 1925) that industries which have to deal with lime or cement are very liable to induce a definite dermatitis. In a recent volume Prosser White mentions that plasterers, masons, whitewashers, bricklayers and cement workers frequently suffer from an eruption caused by splashes when slaking lime and from the presence of lime dust, and he pictures the deformed nails of a plasterer. Farm labourers and fruit growers are acquainted with the burns experienced when lime-washing their fruit trees.

With the great expansion which has occurred in the use of lime in the preparation of cement, it is probable that this

lime dermatitis may be met with more frequently. In a letter which appeared in the *British Medical Journal* (1922, ii. p.826) Dr. Norman Dykes has described a case of generalized dry scaly eczema with painful fissures in a foreman rough-caster working in cement, and notes his own inability to find any reference to cement as a cause of occupational dermatitis. An unsigned letter in the *Lancet* (vol. ii. p.368) in 1917 records that Portland cement if moistened and allowed to adhere to the fingers for half an hour blanches and shrivels the fingers and bores pinholes in the tips. Dr. O'Donovan in his summary at the close of his article gives his opinion that lime dermatitis is now to be looked for in a wide field of industrial life. The types of the dermatitis that may be seen are vesicular eruptions or cheiropompholyx lime holes, seborrhoeic eczema, exfoliative dermatitis, erythrodermia, and pustular folli-

cular dermatitis. Oversweating and abnormal dryness of the skin are predisposing factors. Preventive measures consist in frequent changes of all dust-

laden underclothing, alternation of employment to lime-free work, and the nightly application of emollient grease to the skin of the face, hands and forearms.

NINETEEN TWENTY-FOUR OUR BEST HEALTH YEAR

THE Metropolitan Life Insurance Company in their statistical Bulletin for January call attention to the fact that the health of the people of the United States and Canada was better in 1924 than ever before. This is the first year in which every important cause of death has registered a decrease from the year before. This is indicated by the year's low mortality record for approximately sixteen million people—the Industrial policyholders of the Metropolitan Life Insurance Company—who constitute approximately one-seventh of the combined population of the two countries. Their deathrate was 8.5 per 1,000, which was 5.2 per cent. better than the year before. In past years, the mortality experience of this large cross-section has proved the best index of what has occurred in the general population, the mortality statistics for which do not become available until months after the insurance figures are at hand.

There were 130,790 deaths in 1924, which was 7,210 less than would have occurred under the 1923 rate, and 61,958 less than if the 1911 deathrate had prevailed in that year. Comparing this decline with that for the United States Registration Area between 1911 and 1923 (the latest year for which comparable data are available), the rate among the insured fell 28.4 per cent. during the period as compared with a 12.1 per cent. decline in the rate for total Registration Area. The accumulated saving in the twelve year period since 1911 represents a total of 171,341 lives; and if we may hazard a guess as to the added gains from the 1924 record, the figure, to date, will be considerably in excess of 200,000 lives.

This great improvement in the mortality rate for 1924 has been apparently due chiefly to the absence of the prevalence

of any epidemic disease. The influenza death rate was one of the lowest ever recorded. Deaths from pneumonia were also lower than usual. The epidemic diseases of childhood, measles, scarlet fever, whooping cough, and diphtheria, registered the lowest rates on record. Diphtheria offered a most striking example of improvement in its death rate through the advance of scientific medicine. The rate 12.8 per 100,000 was the lowest ever recorded in the history of Metropolitan industrial policy holders, representing a drop of fifty per cent. from the rate ten years ago. Nineteen twenty-four also recorded the lowest mortality rate in typhoid fever in the history of the company, 4.5 per 100,000, a reduction of 13.5 per cent as compared with 1923, and of seventy-two per cent. in ten years. Possibly the greatest single public health achievement in 1924 was the further reduction of the death rate from tuberculosis which fell to 104.7 as compared with 110.5 per 100,000 in 1923. This makes a total decline of 53.4 per cent. since 1911. We note that the cancer death rate was also slightly lower than in 1923 or 1922, although the decline is so slight that it cannot be regarded as definite progress. The principal degenerative diseases recorded under the names of cerebral haemorrhage, organic heart disease, and chronic nephritis recorded minor declines. The rate for chronic nephritis is the lowest recorded in the history of the company. Deaths in automobile accidents again increased in 1924. Mortality from this cause has more than doubled since 1916, has tripled since 1915, quadrupled since 1913, and increased seven fold since 1911. The only comfort in this department is that the rate of increase slackened slightly last year.

ON OXALURIA

CALCIUM oxalate is a normal constituent of the urine. In conditions of health the amount excreted is small. Nevertheless it may be found in crystalline form in about thirty to forty per cent of urines which present some slight abnormal condition. It must be remembered that its solubility in the urine is low and varies with the reaction. In very acid urine the normal amount present is in complete solution, but in amphoteric, alkaline, or even slightly acid urines, only a minute trace is held in solution, the remainder being passed as crystals. Oxalic acid is produced in the body under many slight disturbances of metabolism, from the carbohydrates by imperfect oxidation, from protein and nucleoprotein by breaking down of their complicated structures, and also from fats. In addition oxalic acid and its salts are present in many common food-stuffs such as spinach, rhubarb, sorrel, gooseberries, strawberries, and beetroot; also to a slight extent in tea, cocoa and chocolate. One fact regarding oxalic acid is of physiological importance, namely the greater solubility of the magnesium oxalate as compared with the calcium salt, so that the administration of magnesium salts in the diet can increase the amount of oxalate excreted.

The surgical manifestations of oxaluria have, perhaps, not been sufficiently realized by the profession, and the *Lancet* (March 28, 1925) in an editorial calls attention to an address of Mr. Bathe Rawling before the Medical Society of London, in which he describes some alarming symptoms produced by severe oxaluria. One of the most important of these mentioned by him was an abdominal condition which resembled an acute intestinal obstruction. Mr. Rawling's first patient manifesting this condition was his own house surgeon, who was suddenly seized with abdominal pain accompanied by vomiting, abdominal distension, and complete constipation. The patient was seen by Sir D'Arcy Power and Sir Anthony Bowlby as well as by Mr. Rawling. All agreed that acute in-

testinal obstruction was present and laparotomy was performed, but with a negative finding. The next day the patient having shown no improvement, another consultation was held and a second exploration was advised. Fortunately, for the patient before it was carried out he passed large quantities of flatus, enemas became successful, and the second operation became unnecessary. The urine passed later was found to be smoky with blood and heavily laden with oxalate crystals. Later on a small calculus was passed. Shortly afterwards Mr. Rawling met with a similar case, also a medical man, who presented a similar clinical picture. A noticeable feature in both cases was that the patients neither felt nor looked as ill as do cases in which acute intestinal obstruction is really present. These cases were examples of acute abdominal manifestations accompanying or perhaps due to oxaluria. Mr. Rawling considered the severe symptoms present in these cases to be due to a reflex disturbance from the renal nerves affecting the sympathetic nerves controlling the intestines. Other and more numerous examples were quoted by him of recurrent attacks of abdominal pain with distension, not so severe as the foregoing but sufficient to make the patient seek advice. Mr. Rawling called attention to another surgical condition complicating an excess of oxalates in the urine in which there is a urethral discharge which may vary from a slight mucous stickiness to a frank muco-purulent discharge.

After the address Sir William Wilcox emphasized the fact that the presence of calcium oxalate crystals in the urine does not necessarily imply oxaluria, and that such grave conditions as had been mentioned should only be attributed to oxaluria in the absence of definite evidence suggesting other lesions. In the treatment of oxaluria he recommended careful dieting with the exclusion of all food-stuffs known to be rich in oxalates; and making use of foods rich in magnesium, by the avoidance of hard drinking waters, and by the establishment of a proper hygienic habit of life.

Editorial Comments

THE SASKATCHEWAN EPIDEMIC OF POLIOMYELOENCEPHALITIS

Dr. Walsh's report of an epidemic of anterior poliomyelitis (which appears in this issue) is remarkable in its portrayal of the great variability of clinical findings that may mark the course of an epidemic of poliomyelitis. It is a striking example of the wide-spread involvement of the nervous system, including in its range many of the recognized types of the disease, ranging from the more common spinal type to the less frequent cerebral and bulbar forms. In fact, the incidence of the latter as manifested in dysphagia and respiratory paralysis, terminating in oedema, is very striking.

The clinical picture, herein depicted, should go far to dispel the older but firmly fixed notion that poliomyelitis (poliomyeloencephalitis) is essentially a disease of the anterior columns of the spinal cord; even more, that it is essentially a disease of the nervous system. The disease is primarily a general infection in which the nervous system, as a whole, offers little resistance to the invading virus and the frequency with which encephalitic signs are encountered, renders the change in nomenclature from poliomyelitis to polioencephalomyelitis, an obvious one.

The high incidence of encephalitic pathology in this outbreak points to the general tendency of one type of the disease to reproduce its own kind throughout an isolated epidemic, as pointed out by Müller.

F. H. MACKAY

It gives us great pleasure to announce that the Royal College of Surgeons of England has

conferred without examination the Fellowship of the College upon Alexander Primrose, C.B., M.B., C.M. (Edin.), Dean of the Faculty of Medicine, Toronto University.

THE JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS

(*Late St. Andrews Institute for Clinical Research*).

A four weeks' course of post-graduate study for a limited number of general practitioners will be held in this Institute commencing upon Tuesday, June 2nd, 1925. The course will consist of lecture demonstrations dealing with the symptomatology of disease on the lines laid down by the late Sir James Mackenzie, and will be supplemented by demonstrations on subjects of clinical interest in anatomy, physiology, chemistry, bacteriology, ophthalmology and radiology by Professor Herring and Drs. MacLennan and Hynd. Members of the staff will give a series of lectures on cardiac and renal conditions. The fee for the course is £5-5s. As the class will be limited in numbers graduates desirous of attending this course should communicate as early as possible with: The Secretary, The James Mackenzie Institute for Clinical Research, St. Andrews, who will send them full particulars and will be glad to advise them with regard to securing rooms in St. Andrews.

The Early Diagnosis of True Hernia of the Diaphragm—It is the opinion of Donald P. Abbott, Chicago, that true hernias of the diaphragm, especially periesophageal, are much more common than is generally supposed. They are not found in the early stage because, owing to the fact that the sac is very small, the subjective symptoms are often slight. For the

same reason, objectively, there are no findings on employing inspection, palpation, percussion and auscultation. The most important means of examination is fluoroscopic. Routine examination of the patient with the fluoroscope will reveal small periesophageal diaphragmatic hernias, which will otherwise be missed.—*Jour. Am. Med. Ass.*, Dec. 13, 1924.

Men and Books

HISTORICAL SKETCH OF THE DALHOUSIE MEDICAL SCHOOL

W. H. HATTIE, M.D.

*Professor of Hygiene and Public Health,
Dalhousie University*

In 1814, the port of Castine (at that time a part of the Commonwealth of Massachusetts, now of the State of Maine) was occupied by British forces under the command of Sir John Sherbrooke, who was then the Lieutenant-Governor of Nova Scotia. The customs duties collected at that port during the period of British occupation were separately accounted for in what was termed the Castine Fund. A few years later it became the duty of Sir John's successor to determine the disposition of this fund. The new Lieutenant-Governor, the Right Honourable George Ramsay, ninth Earl of Dalhousie, was deeply interested in education, and in 1817 he proposed that a considerable part of the fund should be appropriated "to the founding of a College or Academy on the same plan and principle as that in Edinburgh." With the approval of his Council, the proposal was submitted to the British government, and in due time the royal assent was secured. Thus it came about that the sum of £9,750 was appropriated, and that, in 1818, a college was founded at Halifax which bears the proud name of its founder.

University powers were conferred upon the college by an Act of Parliament in 1841, but it was not until 1863 that steps were taken towards the establishment of a medical faculty. In that year the Governors of the University asked the Medical Society of Nova Scotia to approve their proposal to organize a medical school. The Society declined to do this because there was no Anatomy Act and the clinical facilities then existent in Halifax were insufficient. The original building of what is now the Victoria General Hospital had been opened only four years previously. This accommodated a comparatively small number of patients, and other institutions could offer little opportunity for clinical teaching. Among the advocates of the school, however, was one whose zeal, energy and resourcefulness brought him later into a position of great eminence in Canadian affairs—Dr. (afterwards Sir) Charles Tupper. Dr. Tupper became Premier of Nova

Scotia in 1864, when too, he was a governor of Dalhousie and the president of the provincial Medical Society. Profoundly interested in all matters pertaining to education (it was he who, in spite of strong opposition, succeeded in securing the legislation necessary for free, non-sectarian schools throughout the province), he enlisted the support of several influential friends and did not rest until he had succeeded in removing the obstacles to the establishment of a medical college. A partial course was inaugurated in 1867, which was extended to a complete course three years later.

The original faculty was composed of Doctors William J. Almon, A. P. Reid, Edward Farrell, A. H. Woodill, James D. Ross, Thomas R. Almon and Alexander G. Hattie, and Professor George Lawson, none of whom are now living. Advanced standards were set for the new school. The matriculation requirements were those prescribed by the General Medical Council of the United Kingdom. A graded curriculum; four years of medical study; the greatest practicable application of laboratory instruction; and a high standard for written, oral and clinical examinations were insisted on.

The Dean of the Faculty was Dr. Reid, whose death occurred but a few years ago. He and his colleagues were indefatigable in their efforts to develop a school which would command the respect and confidence of the profession and the public, and their self-sacrificing devotion to the cause they espoused continues to inspire their successors in medical teaching at Halifax.

The original Dalhousie College building occupied the site of the present city hall. The accommodation which was available for the new faculty was restricted and none too comfortable. The dissecting room was in the attic, where the ceiling was so low that students could not stand upright. Moreover, the hospital and the alms house, the main resources for clinical teaching, were nearly a mile distant from the college. The University was unable to provide adequate support to the medical school, and it soon became evident that the continuation of medical teaching at Halifax was contingent upon other arrangements. The result was that, in 1875, the medical school was detached from Dalhousie and was organized as a separate institution known as the

Halifax Medical College. A building was constructed near the hospital and alms house, and thenceforth, until 1895, this building was used for the major part of the didactic teaching. Close relationship with the University was maintained, however, and the teaching in the pure sciences was carried on by the latter. In 1885, an examining faculty, composed mainly of members of the staff of the medical college, was established by the University, and thereafter students of the medical college took the Dalhousie examinations and obtained the Dalhousie diploma.

Those responsible for the famous report of the Carnegie Foundation on medical education were very severe in their criticism of the "plant" of the Halifax Medical College. They spent little time in its inspection, carried away many wrong impressions about its organization, and did not give the quality of the teaching the credit it undoubtedly deserved. But the report gave fresh stimulus to a movement which was already on foot looking towards the resumption of medical teaching by the University. Some years before, the University had outgrown its original building and had removed to what is now known as the Forrest Building (because it was erected during the presidency of Dr. John Forrest) in close proximity to the medical college. The bonds between the two institutions had been tightening, and it had become the general opinion of the college staff that satisfactory progress could result only under University auspices. Negotiations were consequently begun which resulted in the University taking over the property of the college in 1911 and again assuming the responsibility for the maintenance of a full course in medicine. To facilitate this arrangement, all on the staff of the old college tendered their resignations, and the University was given a free hand in the re-organization of its medical faculty.

For four years it was necessary to retain the building erected by the Halifax Medical College for use by the medical faculty. The expansion of the University had been more rapid than was anticipated, and the Forrest Building had become quite inadequate. A large property, known as the Studley estate, overlooking the North West Arm, had been secured for a new home for the University, and as soon as buildings for the non-professional schools were ready for occupation, in 1895, the major portion of the Forrest Building was given over to medicine.

Promptly upon the re-establishment of a teaching faculty, full time appointments were made to

the chairs of anatomy and physiology, the chair in anatomy having been endowed by the late Dr. D. A. Campbell as a memorial to his son, Dr. J. G. D. Campbell. Subsequently other subjects—embryology, histology, biochemistry, pharmacy, pharmacology, pathology, bacteriology and hygiene—were placed under full-time men.

Several years ago, a pathological building was erected by the Victoria General Hospital which provided accommodation for the teaching of pathology and bacteriology. This has just been replaced by a much larger structure, designed with particular reference to instruction in these subjects and in public health laboratory work. In 1923, a fine new building was opened, adjoining the Forrest Building, which houses the departments of physiology, biochemistry, pharmacy, pharmacology and hygiene. The laboratories of anatomy, biology, embryology and histology, and the medical library are located in the Forrest Building, and here, too, most of the didactic teaching in the final subjects is given. Instruction in chemistry, physics, and the cultural subjects of the first two years is given in the buildings at the new site of the University (Studley), at a conveniently short distance from the medical group.

Facilities for teaching have been extended in a manner quite comparable to those for the pre-clinical subjects. The Victoria General Hospital has been enlarged from time to time, and now accommodates more than 250 patients. Three other hospitals, the Children's, the Grace Maternity and the Tuberculosis hospitals, have been erected during recent years, all within a short radius from the Forrest Building. The medical staffs of all these hospitals are made up of members of the medical faculty, and students are admitted to the hospitals, and also to the Nova Scotia Hospital (for the insane) to the Civic Isolation Hospital and the infirmary wards of the City Home, and to the Halifax Infants' Home, under very favourable conditions.

The latest addition to the "plant" of the medical faculty is a splendid building known as the Dalhousie Public Health Clinic, which was opened in November of last year. This Clinic is of interest because it not only serves as an outpatient department for the several adjacent hospitals, but as a centre from which a variety of social activities is directed. The students receive here their practical instruction in minor illnesses, and have the opportunity of observing, in an atmosphere of cooperation, the methods followed by several agencies engaged in public health and social wel-

fare work. The building was designed with careful thought for the conduct of treatment and preventive clinics under the most convenient and advantageous conditions, and has been found to fulfil its purpose admirably.

The present course in medicine extends over six years. The entrance requirements are the full equivalent of senior matriculation in Arts. In the first year, two cultural subjects are introduced in addition to biology, chemistry and physics. Chemistry and physics are continued in the second year, with one cultural subject, and embryology, histology and anatomy are added. The remaining four years are devoted entirely to medical subjects, the final year being reserved almost entirely for clinical teaching.

The writer has witnessed the development of medical education in Halifax over a period of

more than thirty years. The contrast between the modest equipment of the Halifax Medical College and that now possessed by Dalhousie is very marked. The rapid strides of late years have been made possible largely through the munificence of the Rockefeller and Carnegie Foundations, without which the medical school would lack many of the material advantages it is now able to show. But it is to the magnificent devotion of the staff, particularly those who gave or are giving freely of time and talent, in many cases without any and in all cases without adequate remuneration, that most credit is due. Money gifts came in recognition of this unselfish service, and for such time as Dalhousie can attract the type of medical teachers in which she has thus far been able to pride herself the success of her medical school is assured.

Fouchet Test in Cholecystitis—The technique as described by Fouchet was followed minutely by John D. Garvin, Rochester, Minn. This is an oxidation test for bilirubin, and is held by its author to give a green color reaction when bilirubin is present in the blood serum in dilutions up to 1:60,000. Equal parts of serum and reagent are added. The reagent consists of trichloroacetic acid, 5 gm.; water, 20 cc., and ferrie chlorid, 2 cc. Four hundred and fifty-eight patients were examined. Eighty-six had some form of cholecystitis; the others were used as controls. Fifty-four positive reactions were obtained in the entire series. Of the eighty-six patients with disease of the gallbladder, seventy-one (82.6 per cent.) had a negative reaction to the test. Only fifteen (17.4 per cent.) had a positive reaction. It is of interest to note that in five cases of duodenal ulcer a positive reaction was obtained, thus confirming the findings of Speik, Liljedahl and Falk. These five patients were operated on, and the gallbladder pronounced normal on exploration. Of the 404 cases in which the reaction was negative, seventy-one were cases of cholezystic disease, thirty-eight simple cholecystitis, and thirty-three cholecystitis with cholelithiasis. In many of these cases, diagnosis was verified at operation; others were checked by positive roentgen-ray findings, and still others by the clinical history alone. None of the tests

were made during an attack of gallbladder colic; some were done two or three days after; but in all the remaining cases, the gastric symptoms or pain in the gallbladder were still prominent. This places them in the "interval" class of Friedman and Straus. Garvin feels that therefore the value of the Fouchet test as a diagnostic adjunct seems questionable.—*Jour. Am. Med. Ass.*, Feb. 14, 1925.

Observations of the Visualized Gallbladder by Graham Method—The observations made by Daniel N. Silverman and Leon J. Menville, New Orleans, on the gallbladder in two cases were made on a physiologic basis, obviating all interferences with the gallbladder mechanism that must necessarily accompany anaesthesia and operative procedure. The duodenobiliary drainage following a single stimulation with magnesium sulphate solution produces a reduction in size and alteration in shape of the gallbladder shadow when visualized by the Graham method. Plates taken at intervals up to twenty-four hours after injection of the dye, but without drainage, show no parallel diminution in size or alteration in shape of the shadow. Since nonsurgical biliary drainage reduces the size and alters the shape of the gallbladder, we are led to conclude that drainage of the gallbladder does take place.—*Jour. Am. Med. Ass.*, Feb. 7, 1925.

Correspondence

ON THE PASSING OF THE ANATOMY ACT

I.

From Dr. D. E. H. Cleveland

To the Editor:

In his paper, "The Passing of the Anatomy Act" as published in the *Canadian Medical Association Journal* for February, Professor McGibbon perpetuates the popular superstition that the Roman Catholic Church in mediæval times prohibited anatomical dissection of the human body.

That Boniface VIII. ever issued a bull prohibiting anatomical dissection or the "preparation of skeletons" for purposes of scientific study is untrue. Nor is it true that the bull "*De sepultris*" of Boniface VIII., the document popularly supposed in modern times to have embodied such prohibitions, was ever misinterpreted in such a way as to interfere with the anatomical study of the human body. It therefore follows that the statement that "the entire continent of Europe then lay under the ban, which the Roman Church had placed upon dissection, and this was specially felt in Belgium, France and Spain," is equally incorrect. Such a condition has at no time existed, either prior to the Reformation or since.

The bull "*De sepultris*" was issued in 1300, and it is made clear in the first brief paragraph, and reiterated with explicit detail throughout, that it deals with an entirely different matter. It was directed against the foolish and unsanitary practice that had arisen during the Crusades of dismembering and disemboweling the bodies of those who had died at a distance from their native land, in order that these remains might be transported home for burial.

The medical history of the times furnishes abundant evidence that the bull of Boniface VIII. was not misconstrued as being directed against anatomical dissection of the human body. With regard to the apparent paucity of Mondino's dissections, while it is true that there is no absolute evidence for his having performed at the most more than four human dissections,

nevertheless he wrote a manual of dissection that ran through twenty-five editions in print and was a standard work for some centuries. This book contains internal evidence that his human dissections had been numerous, and this is further attested to by his pupil Guy de Chauliac in his celebrated surgical treatise. Mondino's dissections were being performed less than twenty years after the promulgation of Pope Boniface's bull, and in schools under the supervision of the Church.

At Padua, one of the great Italian medical schools, human dissection was practised in the fourteenth century, and it is recorded that in a dissection here in 1341 Gentilis discovered a gall-stone. This was before Padua became a Venetian city, which is significant in view of the popular notion that dissections were permitted in Venice only by reason of the antagonism between Venetian and papal authority.

It is singular that the backwardness of the remainder of Europe in anatomical research is ascribed to the mythical papal ban. If it operated anywhere it would surely be in Italy. Yet it is a well known fact that from the time of Mondino onward, Italy with its medical schools such as Padua, Bologna, Venice, and Pisa was the Mecca of anatomists. In the sixteenth century we find the Fleming Vesalius, in the seventeenth century the Danish Lutheran Stensen and the Englishman Harvey studying in Italy where they came for the opportunities afforded for anatomical investigation which their own countries would not afford them. Stensen, a Protestant, was appointed professor of anatomy in Padua. When he returned to accept the same chair at Copenhagen he soon found that having become a Catholic while at Padua he was not acceptable, and returned to Italy, later to take orders and become a bishop.

The fact is that Professor McGibbon is perfectly correct in saying that in the Christian era the same hostility to dissection was encountered as in pagan times. But as Professor McGibbon and all others concerned know, hostility to dissection and the performance of autopsies is still far from rare to-day even in non-Catholic countries. Such hostility has not and never had any

support from the Roman Catholic Church. In mediæval Europe while lay officials shared with the people the superstitious fear of the anatomist and surgeon bent on research, resort was frequent by learned bodies to the clergy and hierarchy requesting permission for dissection which had been refused by civil authority. This was more commonly successful through the power exercised by the clergy over the civil authorities in Italy than elsewhere, hence the vigorous prosecution of anatomical study in Italy as compared with other countries. English law from the time of Henry VIII. had permitted only bodies of executed murderers to be dissected, and no reformation occurred until 1747, when for five centuries at least dissection had been performed without any such hampering in Italy.

Professor McGibbon is recommended to refer to the works of Dr. Jas. T. Walsh, a well-known authority on the history of medicine, for original sources and accurate information regarding the relationship of the Roman Catholic Church to scientific research. Also to the article on the subject in the *Encyclopaedia Britannica* (11th Ed.) by Professor F. G. Parsons, which while very thorough is remarkable in its failure to mention any prohibition of dissection by ecclesiastical authority in Europe, although it mentions the fact that Mahomedans are prohibited from dissecting by their religion. The *Britannica* is very accessible, its authority is generally accepted, and it is not noted for Catholic bias. Familiarity with these two sources of reference alone can leave no one room to accept Professor McGibbon's inaccurate statements.

Vancouver, B. C.
February 20th, 1925.

D. E. H. Cleveland

II.

From Professor R. T. McGibbon

To the Editor:

Dr. Cleveland has pounced furiously upon half a paragraph of my paper on "The Passing of the Anatomy Act." The paragraph in question deals with the history of dissection, a subject which has little to do with the main theme of my paper. This being so, I spent little time in choosing my authorities for this subject, and certainly none at all in an examination of their religious creeds! I lay claim to little

knowledge of the history of medicine, and so hope to be forgiven for having put forward an interpretation of the bull "*De sepultris*" which for some time held credence. But if Dr. Cleveland insists on the bringing into prominence the "relationship of the Roman Catholic Church to scientific research," and the establishing of the good name of that Church in that respect, he must explain statements found in articles of much less humble authorship than mine. For instance, he must seek to correct the following, if these also be inaccurate statements:—"If one reflects upon the nature of the obstacles which in 1315 stood in the way of a revival of this practice,—for example, the deep-seated prejudice against it entertained by all classes of the community, and the very strong opposition of the ecclesiastic authorities to what they honestly believed to be a desecration of the human body,—one will readily appreciate how great was the courage displayed by Mondino when he almost openly undertook his first dissection." (Buck. p. 281). "Orders were issued to the Italian Bishops during the latter part of the fourteenth century to put a stop to further dissections, and for a period of over one hundred years these orders accomplished the purpose desired." (Buck. p. 337). "Mundinus did not go far. He like other anatomists, like indeed Vesalius himself, had to struggle against not only the authority but the direct hand of the Church. She taught the sacredness of the human corpse, and was ready to punish as sacrilege the use of the anatomist's scalpel." (Foster's *History of Physiology*). "He (Berengarius, at the beginning of the sixteenth century) too had his struggles with the Church." (Foster). "Far away from the papal throne, in distant Spain, the Church was all-powerful and there desecration of the corpse with the knife was well-nigh impossible. In Belgium too, and in France, opportunities for dissection were rare. But here, in Venice, nearer the papal seat, the Church's hand was less heavy. The high spirited citizens of the Republic were resisting as we know in many ways the Pope's demands; and under the protection of the Senate, Vesalius had opportunities for the advance of knowledge which he could not have enjoyed elsewhere." (Foster).

"Spain, as it then was, could be no home for a man of science. The hand of the Church was

heavy on the land; the dagger of the Inquisition was stabbing at all mental life, and its torch was a sterilizing flame sweeping over all intellectual activity. The pursuit of natural knowledge had become a crime, and to search with the scalpel into the secrets of the body of man was accounted sacrilege. It was for a life in priest-ridden, ignorant, superstitious Madrid that Vesalius had forsaken the freedom of the Venetian Republic and the bright academic circles of Padua; in Madrid, where as he himself has said, 'he could not lay his hand on so much as a dried skull, much less have the chance of making a dissection.' " (Foster).

Dr. Cleveland states that in Italy dissection had been performed for at least five centuries previous to 1747 without any of the hamperings met with in England. Surely this is an inaccurate statement in view of the quotations I have given above, and in the face of what Osler says in his *Evolution of Modern Medicine*—"The bodies (time of Mundinus were usually those of condemned criminals, but in the year 1319 there is a record of a legal procedure against four medical students for body-snatching.") (p. 106). "In the elaborate curriculum of the University of Padua in the middle of the fifteenth century there was no provision for the study of the subject. Even well into the sixteenth century dissections were not common." (p. 148). And Vesalius, at Padua, often used dogs, pigs, cats, and occasionally a monkey (p. 151).

However, as can be seen from its title, my paper has to do with the Anatomy Act, the facts relating to which are more firmly established, and I must crave the indulgence of readers if, on the side issue of the subject of the history of dissection, I have quoted authorities disagreeable to them.

R. T. McGibbon

Winnipeg, March 24th, 1925.

III.

[EDITORIAL COMMENT.—The Editor would greatly regret the continuation of any discussion in which religious predilections enter, even although the discussion relates only to matters of past history. He has therefore referred the original paper and the two letters to Sir Andrew Maephael, Professor of the History of Medicine,

McGill University, who very courteously supplies the following note which the Editorial Board considers must end the matter. At the same time it desires to thank Professor McGibbon and Dr. Cleveland for bringing out details in reference to the past history of the Anatomy Act, which will be read by all with much interest.]

IV.

Sir Andrew Maephael writes as follows:

This controversy arises out of a statement made by Prof. R. T. McGibbon in the *Association Journal* for February, 1925, page 209, paragraph 2. His words are: "Pope Boniface the eighth issued a bill prohibiting even the preparation of skeletons." In the current number, Dr. D. E. H. Cleveland writes: "That Boniface VIII ever issued a bull prohibiting anatomical dissections or the 'preparation of skeletons' for purposes of scientific study is untrue."

Taking it for granted that the "bill" in Dr. McGibbon's text is the bull issued by Pope Boniface VIII in the year 1300, and referred to by Dr. Cleveland as such, that bull reads: "Persons cutting up the bodies of the dead, and barbarously cooking them, in order that the bones being separated from the flesh may be carried for burial into their own countries, are by the fact itself excommunicated." The reference throughout is confined entirely to the bodies of soldiers fallen in foreign fields.

Dr. McGibbon, it would then appear, has fallen into error. The bull refers to the preparation of bodies for burial, not for dissection. Arising out of that error, he makes the further statement, in the third sentence following: "The entire continent of Europe then lay under the ban which the Roman church had placed upon dissection." To this also Dr. Cleveland takes direct and consequent exception.

I, myself, am not aware of any such "ban." My reading of history is quite to the contrary. The Italian schools of the Renaissance were based upon human anatomy, although it is quite true that dissection was carried on with difficulty; but even in Edinburgh, and in other schools too, down to our own time the way of the dissector was hard. Within sixty years of the issue of this bull, Guy de Chauliac, the father of modern surgery, was surgeon to at least three

popes—at Avignon, it is true—and whilst a member of their household, insisted upon the importance of dissection as performed by Mondinus.

This controversy is not new. Those who are interested in tracing it to its source will find that source in *L'Histoire littéraire de la France*, issued by members of the *Institut*, which is a continuation of an earlier work by the Benedictines of Saint Maur. The only "ban" I can recall, even remotely connected with the subject, is the Edict of the Council of Tours in the year 1163, by which priests were forbidden to perform surgical operations, on the ground that *ecclesia abhorret a sanguine*. There is evidence that this action was stimulated by the Medical Faculty of the University of Paris who desired then, as now, to retain the practice in their own hands. The movement was evident at the council of Rheims in 1125, and at the Lateran Council of 1139; but not all these Councils were ecumenical; certainly, the Council of Tours was not, and one cannot determine from its action the general policy of the Church. This Edict of Tours has also been misconstrued as a "ban" upon surgery; it was really an attempt to confine the practice of surgery to professional surgeons.

In his second communication, dated March 24th, Dr. McGibbon becomes less specific, and it is therefore not so easy to controvert or confirm his statements. "Orders were issued to the Italian Bishops during the latter part of the fourteenth century to put a stop to further dissections," he quotes from the American "Buck," but I cannot find in Buck's writings or elsewhere any account of such "orders." The rhetorical "Foster" merely follows the vague impressions of his time, which are now as belated as his own physiology. Finally, the name of Osler is evoked; but even in the quotations given there is not the slightest reference to any church.

An error does not become truth by reiteration; the propagators do not become "authorities" by repetition. In the present controversy there is a nice example of the danger there is in relying upon "authority." Dr. Cleveland defines the bull in question as *De Sepultris*. Dr. McGibbon in his reply follows him, and writes *De Sepultris*. They are both wrong. The term is *De Sepulturis*: Concerning the burial—not the dissection—of the dead.

THE FARRIS LIBEL SUIT

To the Editor:

As you have given considerable prominence to my recent libel suit, I think it would interest your readers to have a further statement of some matters of importance that were not brought out in the report of the trial.

About two weeks before the Canadian Medical Association met in Ottawa I was notified by the Drisgo Laboratories' lawyer that unless I retracted my statements I would be prosecuted for libel. I went to Ottawa two days in advance of the meeting of the Canadian Medical Association and did all in my power to interest the Canadian Medical Association in this matter of a libel suit. I did feel that I should have the backing of the Canadian Medical Association. I saw a member of the executive, the secretary and a good many members of the Canadian Medical Association. Dr. Ryan, also, the New Brunswick representative on the executive did his best to have this matter brought up and discussed. But no time was given to its consideration.

On my failure to secure the backing of the Canadian Medical Association, I engaged a lawyer on my return to St. John and told him to take full charge, and notified the Drisgo Laboratories that it was in the hands of my lawyer for any further discussion.

The trial lasted two weeks and for the first week Mr. Teevens, Chief of the Proprietary or Patent Medicine Department at Ottawa was present and heard much of the evidence. As his evidence did not seem necessary, he was allowed to go home. Before returning, he told me that if we proved they claimed that this so-called medicine was a cure for tuberculosis the license would be cancelled. He also stated that if we proved that they issued false and misleading statements or that they had used the fact that this remedy had been passed upon by a Board at Ottawa this also would call for a cancellation of the license. Immediately the trial ended I wrote Mr. Teevens making the definite charge that we had proved all these three and asked that the license be cancelled. I received a letter from Mr. Teevens asking me to send him a statement of why the jury gave the verdict they did. I wrote him in reply that it was impossible for me to state why the jury gave the decision, but they gave a unanimous decision, and I gave him a summary of the whole trial; the stenographic report would have cost several

hundred dollars. In reply to this letter I received a letter from Mr. Teevens, stating that the license had been re-issued and that the Drisgo people had fulfilled the law in all details.

I then asked how it would be possible to proceed to get such a license cancelled, and I have not had any reply.

It was brought out at the trial that the first application for a license for this so-called medicine was refused on the ground that it was insufficiently medicated and that the Board had advised the Drisgo Laboratories that if they would add quinine they would issue a license to them. They added quinine, but found that that precipitated something in the mixture. Mr. Driscoll then went to Ottawa himself, and after a special interview was given a license. He was able, also, to register a label with the heading "Health comes with every swallow," and below this was a statement that it was a valuable remedy in the treatment of diseases of the pulmonary tract. The words "Health comes with every swallow" were in small type on the bottle, but in large type on the container. I am at a loss to understand how such a label could have been registered.

This Company was able to sue me for libel and put me to great personal expense, and they apparently have no money to back them, as so far I have got a very small part of the amount due on the bill of costs, and I have had to pay all costs up to date.

I might add that I have received very great courtesy from the American Medical Association, who gave me much excellent advice and help. I am very appreciative of the very great kindness I have received from Dr. Lafleur, Dr. Elliot, Dr. Parfitt and Dr. Blackader as individuals.

It does seem to me that when a jury has given a ruling that a physician is justified in calling such a medicine a fake cure; and as it was proved to have been called a cure, and proved that false and misleading statements were used, and that the fact that it was licensed was used freely, and that this was distinctly contrary to law,

Posterior Arthroscopy of the Hip Joint.—An anatomic approach to the posterior aspect of the hip joint is described by Frank R. Ober, Boston. It has been his experience that septic hips drained by the methods of Langenbeck and of Kocher, and the consequent amount of hemorrhage encountered, frequently requiring the use of many artery forceps, which were

some action should be taken by the Patent Medicine Department.

I am,

Yours truly,

H. A. Farris, M.D.

St. John, N.B. February 10th, 1925.

To the Editor:—

My attention has been drawn to a communication which you are publishing over the signature of Dr. H. A. Farris, of St. John, N.B., in which the Executive Committee of the Canadian Medical Association is criticized for not supporting Dr. Farris in his recent litigation with a patent medicine company.

The Executive Committee, unfortunately, was not in possession of the facts of the case, due to a complete misunderstanding with Dr. Farris. We have endeavoured to explain matters very carefully and fully to Dr. Farris and we gladly take this opportunity of publicly expressing to him our sincere regret for seeming lack of interest in the battle which he waged successfully in the interests of the health of the people of Canada.

Yours faithfully,

T. C. Routley, M.B.,

General Secretary.

184 College Street, Toronto, April 18, 1925.

LETTER FROM CHINA

To the Editor:

I have been receiving issues of the *Canadian Medical Association Journal* for some months believing it to be sent by some individual whose identity would become known. A few days ago I noticed that it was the generous and thoughtful gift of the Canadian Medical Association.

I wish to convey my hearty thanks to the Association.

Yours sincerely,

T. A. Pincock

Canadian Methodist Mission,
Chungchow, Szechwan, China.

January 25th, 1925.

always in the way, making it difficult to get a clear field. Ober advocates the use of his operation in: septic arthritis of the hip joint; osteomyelitis of the neck of the femur; excision of the head of the femur; osteotomy of the neck of the femur; removal of foreign bodies.—

Jour. Am. Med., Ass., Nov. 8, 1924.

Abstracts from Current Literature

MEDICINE

Studies in Scarlet Fever. II. Studies on the Use of Convalescent Scarlet Fever Serum and Dochez' Scarlatinal Antistreptococcic Serum for the Treatment of Scarlet Fever. Birkhaug, K. E., *Bulletin of the Johns Hopkins Hosp.*, Feb., 1925.

The writer has already shown that there are wide differences in the blanching properties of normal human serum, convalescent scarlet fever serum, and Dochez' scarlatinal antistreptococcic serum. The latter blanched a larger area of the rash than did the other two sera, and continued to do so until the fourth day of the disease. In the present paper he presents the results obtained in the treatment of two groups of cases; (a) a group of thirty-seven cases, treated with intra-muscular injections of serum from convalescent cases of scarlet fever; (b) a group of thirty-one cases treated with Dochez' scarlatinal antistreptococcic serum.

Comparison of results showed that the convalescent serum brought about a rapid improvement in general symptoms, and a slight fall in the temperature and pulse rate; but there was no effect on the general rash, the convalescence was not shortened, and there was no reduction in the incidence of septic complications during convalescence.

Dochez' serum, on the other hand, administered during the first three days of the disease, caused a prompt disappearance of the toxæmia, a fall in the temperature and pulse rate, fading of the general rash, rapid reduction in leucocytosis, and an early disappearance of the glandular enlargement. In moderately severe cases a therapeutic dose of 40 cc. of Dochez' serum was enough to bring about a clinical cure.

Emphasis is laid on the value of employing Dochez' serum early in the disease. Patients treated during the first three days of the disease did not develop complications during their stay in the hospital, and the incidence of complication rose rapidly in those admitted after the fourth day of illness.

There seems to have been a high incidence of serum sickness, but it is hoped that improved methods of preparing the serum in the future will lessen this feature. H. E. MACDERMOT

The Leucocyte Curve as an Index of the Infection in Rheumatic Fever. Swift, Homer F., Miller, C. Philip Jr., and Boots, Ralph H., *The Jour. of Clin. Investigation*, 1924, I, 197.

Swift, Miller, and Boots have studied the leucocyte counts in fifty-eight patients suffering from rheumatic fever taking care that the count for a patient should always be made by the same man and at the same hour of the day. There is, as we have known before, a leucocytosis in the disease and this is due chiefly to an increase in polymorphonuclear neutrophiles. An eosinophilia was found only in those patients with chorea or with erythema multiforme. These writers believe that curves constructed from data obtained at frequent intervals tell us something of the severity and duration of the infection. It is of interest to note that those patients with high fever in whom polyarthritis, pleurisy, or pericarditis are the outstanding phenomena usually have a higher leucocytosis than those in whom myocarditis, endocarditis, or subcutaneous nodules are predominant. Thus they would distinguish the exudative and the proliferative types of the disease. These workers found that when the patient is under the influence of anti-rheumatic drugs (e.g., sodium salicylate, aspirin, neocinchophen, and the ethyl ester of phenylcinchonic acid) the leucocyte curve is often lowered. If the infection is not severe and does not last long the curve comes almost down to the normal level and remains there. If the infection persists in spite of the use of one or other of these drugs the curve remains above normal or tends to rise when the drug is no longer given. As a rule with the appearance of a relapse of the disease the number of leucocytes increases. In the opinion of these writers eight to nine thousand constitutes the upper level of a normal white blood cell count.

ARCHIBALD MALLOCH

Industrial Poisoning by Arseniuretted Hydrogen (Arsine). Guelman, I. *The Jour. of Industrial Hygiene*, January, 1925.

Arsine is produced in varying amounts in certain metallurgical and chemical industries, such as the making of aniline dyes, smelting, soldering and galvanizing, and chemical analysis. The treatment of zinc, tin and iron with acids is one of the most frequent sources, since, in the crude form these metals are usually accompanied by arsenic. This gas is highly poisonous, but although dangerous even in very low concentrations, it is so unstable that cases of acute poisoning from arsine are rare. In England from 1900 to 1919, there were fifty-three cases recorded. An instance is quoted of thirty men in a submarine crew being affected, the source of the gas being the corrosion of the lead plates in the batteries.

Dr. Guelman describes in detail the course of acute arsine poisoning in twelve cases treated at the Moscow Institute for Investigation of Occupational Diseases, all of the patients being workers in the galvanizing and etching department of a zinc plant. He dwells on the sudden and rapid onset of the symptoms, shivering, nausea, headache, and bloody urine, the latter being the most outstanding in frequency and severity. The main effect of the poison is on the blood; it passes through the lungs as through "an open gate," producing no noticeable pathological changes in them, a point of differentiation from poisoning by nitric oxide, in which there is acute irritation of the respiratory tract.

Arsine is a powerful haemolytic agent, but in addition to its immediate action on the red blood cells, it leaves effects which are later manifested in toxic polyneuritis, especially in the extremities.

Along with the very marked destruction of the red blood cells there is a leucocytosis, a phenomenon found in a number of similar anaemias, since the decomposition of the erythrocytes gives rise to substances which Nægeli calls blood-generating irritants of the marrow. There are, however, no constant variations in the types of white cells produced. All the other symptoms in this type of poisoning are to be explained on the basis of these changes in the blood. Jaundice is always extreme, and histological examination of the liver showed the bile capillaries to be clogged, because not only

is bile formed in excess from the breaking down of the haemoglobin, but it is unusually viscid. The haemoglobinuria also is the result of overloading the kidneys with the decomposition products of the broken down erythrocytes, although there may be in addition some directly poisonous effects on the kidney tissue from the arsine. The damage to the actual parenchyma is not very considerable; there is a rapid recovery of the kidney function, and in only two cases of this series did the nephritis last any length of time.

Cases of acute poisoning of this type are rare, but the question is being asked whether there may not be a chronic form. H. E. MACDERMOT

SURGERY**Metatarsus Primus Varus or Hallux Valgus.** Townslow, Walter, *Jour. of Bone and Joint Surg.*, Jan., 1925.

The author claims that hallux valgus should really be termed metatarsus varus primus, that is, a varus or inwardly pointing position of the first metatarsal, which in many cases of bunion is primarily at fault rather than the toe itself.

It is pointed out that to account for this inwardly pointing first metatarsal a congenitally deformed internal cuneiform may be found forcing the first metatarsal inwards, occasionally an intermesial or supernumerary bone between the internal cuneiform and first metatarsal, and often a congenital deformity of the proximal end of the first metatarsal itself. By this inward deviation of the first metatarsal the bunion is produced, the source of the deformity thus being, according to the author, at the proximal end of the first metatarsal rather than at its distal end where the bunion occurs.

X-rays are shown in support of this view and it is pointed out that pathological changes occurring at the bunion joint itself are secondary rather than primary. An operation is described, dorsal incision, cuneiform osteotomy of the redundant bone wedge at the metatarso-cuneiform joint, tenotomy of the shortened long extensor tendon of the great toe with loosening up of the outer part of the capsule of the bunion joint. J. A. NUTTER

Acute Pancreatitis. Moynihan, Sir Berkeley, *Annals of Surgery*, Vol. lxxxii.

This author contributes a very valuable article on this subject. He particularly empha-

sizes the suddenness of the onset, the illimitable agony, and the mortality, which go to render it a most formidable catastrophe. There are three types of the disease, the haemorrhagic, gangrenous, and suppurative, which differ only in degree of severity, the essential nature of the disease being the same in all three forms.

The outstanding symptoms are (1) pain; (2) shock; (3) vomiting; (4) cyanosis, and (5) abdominal tenderness with very little, if any, true rigidity. The pain is by far the worst that the human body can suffer, and is remarkable in that it frequently comes after a good meal. It is so intense that it causes profound collapse during which the pulse rises rapidly and the blood pressure falls. The author takes exception to the frequent statement that shock follows the perforation of a viscus, claiming that while the patient may be in extreme agony and show pallor, yet he has never seen the pulse rate or the blood pressure altered such as is the case in acute pancreatitis. The shock of pancreatitis is definite. Vomiting is almost invariably present and occurs early. In this particular only does the disease simulate high intestinal obstruction. However, the character of the vomitus is that of gastric or duodenal origin, never foul-smelling or copious. The cyanosis involves principally the face and is never found in any other acute abdominal condition. It is not always found in acute pancreatitis, but when present is diagnostic. There may be a slight degree of rigidity of the abdominal wall, but there is never the fixity and hardness that is present in cases of perforation. The tenderness is confined to parts above the umbilicus and a degree of fulness may be observed in the epigastrium; hence the term, "epigastric peritonitis" used by Fitz of Boston.

In speaking of the subacute type, Moynihan stresses the importance of Lowe's test (two or three drops of 1/1000 solution of adrenalin causes the pupil to dilate) and the presence of increased diastase in the urine, but places little value on Cammidge's reaction.

The etiology is discussed from an anatomical and a pathological standpoint. The anatomical relationships between the common bile duct and the duct of Wirsung, the close association of the common bile duct and the head of the pancreas, and the intimacy between the biliary and pancreatic lymphatic systems are freely

discussed. The constancy of biliary pathology in cases of pancreatitis is stressed. The author discusses at some length the large amount of experimental work performed during the last few years. He sums this up by stating that two conditions appear to be essential in the causation of acute pancreatitis: (1) an anatomical arrangement of the parts at the termination of the two ducts which permits of their conversion into one channel by the closure of the orifice of the ampulla," and (2) "the presence of infected bile associated or not with cholelithiasis."

Regarding the treatment of the condition he adopts the following procedure: He opens the abdomen above the umbilicus through a paramedian incision, gains access to the pancreas above the stomach through the gastro-hepatie omentum, or below through the mesocolon, and isolates the pancreas by gauze packing. He aspirates any fluid around the pancreas, incises the capsule of the pancreas to allow the escape of blood or fluid, but sees no advantage in incising the pancreatic tissue. This area is drained through the abdominal wall by means of a drainage tube surrounded by gauze. If the gall-bladder appears diseased, cholecystotomy (rarely cholecystectomy) is performed. If the patient is *in extremis* he does not hesitate to simply insert a drainage tube into the fundus of the gall-bladder, leaving the stones for removal at a second operation, at which time the conditions for cholecystectomy are more favourable.

R. V. B. SHIER

Diverticulitis of the Colon. Peck, Charles H., *Annals of Surgery*, Jan., 1925.

Diverticulitis occurs more frequently than was formerly recognized. It is a disease of middle life, affecting males who are obese more often than females. Multiple diverticula may exist, but only when the inflammatory process is added do they produce symptoms.

These diverticula may occur in different areas of the intestinal tract, but are only of clinical significance in the descending colon, sigmoid and recto-sigmoid. Little is known of the etiology except that they are herniae of mucous membrane through a weakened musculature developing into appendices epiploicæ, into fat at the mesenteric border or at the site of vessels in the gut wall.

There are two types of secondary pathological change:

(1) Inflammatory changes extending through the bowel wall, e.g. perforation with diffuse peritonitis or localized abscess, or perforation into a hollow viscus.

(2) Diffuse inflammatory thickening of the bowel wall simulating new growth.

Many cases subside without surgical treatment. When perforation occurs, closure of the perforation and the establishing of drainage are indicated. Abscess requires drainage, while the chronic inflammatory process requires exploration and resection.

R. V. B. SHIER

The Significance of Vital Capacity in Intrathoracic Therapy. Yates, G. L., *Archives of Surgery*, 1925, x, 477.

Reduction in vital capacity is so constant a result of thoracic disease that the extent of this reduction is an accurate measure of the disabilities attributable to them. Life and activities are made possible by external respiration which is provided through coordinated action of breathing and circulatory units.

Coordinated action of breathing and circulatory units maintains sufficient volumes of ventilated air in contact with a suitable area of alveolar epithelium to assure such interchange of gases through a similar expanse of capillary endothelium as will aerate equivalent amounts of blood. The interrelationships between the volumes of ventilated air, the area of alveolar epithelium, the expanse of capillary endothelium and the amounts of blood needing aeration must remain constant although they are constantly fluctuating with each breathing cycle and with variations in activities of the individual.

The principal effects of intrathoracic disease are the malfunctions due to lesions of heart and lungs. Both heart and lungs are possessed of remarkable powers of compensation and repair but, when seriously affected, cause enormous totals of distress, disability and death. Many lesions of heart and lungs from which spontaneous recovery is impossible can be remedied surgically by procedures already devised.

At present, vital capacity is significant in estimating latent powers including defense and repair, in determining therapeutic procedures and in measuring results of treatment.

Vital capacity is regulated by the air cell-capillary gear, the weaker part of which is the circulatory segment. Progress in intrathoracic surgery depends largely on the realization of more effective measures to promote and to conserve the integrity of the pulmonary circulation.

F. B. GURD

Cautery Pneumectomy for Chronic Suppuration of the Lung. Graham, Evarts A., *Archives of Surgery*, 1925, x, 392.

Graham opens his article with the statement that although complete extirpation of the diseased tissue in chronic lung suppuration is most nearly ideal, ordinary resection of a lobe has proved itself to be an extremely hazardous procedure. The mortality in forty-eight cases of lobectomy was 52 per cent.

Up to the time of this report Graham had carried out extensive cauterizations in twenty cases of chronic lung suppuration which had been present for periods of from six months to twenty years. Six cases are free from symptoms and completely healed; four are free from symptoms but with remaining bronchial fistulas; three showed marked improvement but with some cough still present; two were improved; one has not been heard from; four are dead. The deaths have all been due to what seemed to be accidental causes; three from cerebral complications and one from pneumonia in the other lung after operation. There was no death from infection of the mediastinum or pericardium. The mortality of 20 per cent can probably not be ascribed to the operation as cerebral complications occur spontaneously in cases of lung suppuration.

The operation of cautery pneumectomy can be made to combine the three cardinal principles of the surgical treatment of chronic pulmonary suppuration, namely, drainage, compensation and extirpation. For this reason, it would seem to have a wider applicability than any other method so far proposed. Again, the fact that it can be performed in multiple stages with relatively little disturbance to the patient makes it suitable even in patients whose vitality is very low. It can also be carried out when other methods, such as a thoracoplasty, have failed.

The technical procedures are outlined in some

detail in Graham's article as are also complete case reports accompanied by illustrations of all cases.

F. B. GURD

The Coincidence of Pseudo Coxalgia and Kohler's Disease in the same patient. Lane, T. J. D., *The Lancet*, 1924.

The author reports two cases met with at Meath Hospital in 1923 which tend to confirm the view of the French authors that there is not merely a radiographic resemblance but an etiological connection between pseudo coxalgia and Kohler's Disease. In both the author's cases apophysitis of the tibial tubercle (Osgood-Schlatter disease) was absent. The author stresses Sorrel's advice to examine radiographically both feet and hips in all cases of either condition. A detailed account is given with excellent x-ray plates of both cases.

N. T. WILLIAMSON

A Case of Air-EMBOLISM occurring during Urethroscopy. Roper, R. S., *The Lancet*, Jan. 17, 1925.

The literature contains a small number of cases of air-embolism occurring in connection with urological work, and the mortality amongst them has been very high. Dr. Roper's patient was a man of sixty, in whom a urethroscopy had been carried out, with air inflation of the bladder. Within about three minutes of the pumping-in of the air, the patient began to show signs of loss of consciousness, with cyanosis and stertorous breathing. Respiration and pulse-beat gradually slowed and weakened and then stopped. Injections of strychnine and camphor were given and oxygen was sprayed over his face, and on cessation of the breathing, artificial respiration was resorted to, with the result that he began to move and breathe normally. After great restlessness he gradually regained consciousness, and in a few hours had quite recovered. A few weeks later he underwent an operation on the urethra and made an uneventful recovery.

Dr. Roper believes that air-embolism in connection with urethroscopy is a possibility to be constantly borne in mind, especially if the tube fits tightly or if there has been hemorrhage from the urethra. He realizes that it is inadvisable to use the urethroscope within fourteen days of instrumentation for dilatation of

stricture, or where there has been hemorrhage, but even with this precaution there may be a small abrasion of the urethral mucous membrane through which air may be forced into the vessels.

H. E. MACDERMOT

PÆDIATRICS

The Association of Anæmia and Pneumonia in Infants. Treatment by Blood Transfusion.

Bass, M. H., New York, *Amer. Jour. of Dis. of Children*, March, 1925.

Anæmic children are prone to infections which tend to run a severe course due to a lowered resistance. Following the findings of Leake and Brown the author believes that a withdrawal of blood cells from the circulation may take place during the course of a pneumonia, and they suggest that some of the untoward symptoms of the disease may be due to this withdrawal. He describes ten cases of severe pneumonia, occurring in anæmic infants, treated by transfusions of blood. The results show that the addition of the new blood was accompanied not only by improvement in the anæmia but in cure of the infection, in some cases in a manner similar to a crisis.

Blood transfusion is advised as being helpful in the treatment of anæmic infants and young children, especially when the anæmia is complicated by pneumonia. It is not being urged as a treatment for the pneumonia, but as a cure for the anæmia, as a result of which the pulmonary infection is apparently checked and the chances for recovery are greatly increased.

R. R. STRUTHERS

ANÆSTHESIA

Some Cases of Intracardiac Injection in Arrest of the Heart (Di Aleuni Casi D'Iniezione Intracardiaca Nell'Arresto del Cuore). Nicholich, Jr., G. and Pototschnig, G., *La Riforma Medica*, Nov. 3, 1924.

The writer briefly reviews the history of direct injections into the heart and then gives the details of four cases:

1.—A male, twenty-seven years old, with a normal cardiovascular system, was given a mixture of chloroform one part, ether three parts, for the operation of cauterizing a growth in the epididymis. The pulse suddenly stopped and immediately afterwards the respiration.

An intracardiac injection of 1 cc. of 1-1000 adrenalin solution was given three minutes later. The pulse returned and two minutes later the breathing. In ten minutes the patient was conscious. Recovery was permanent.

Case 2.—A woman, aged sixty, was having a large malignant tumour of the thyroid gland removed under regional anaesthesia. There had been attacks of partial suffocation in the preceding few weeks. It was found necessary to do tracheotomy before the removal of the thyroid tumour had been completed. There was great relief to the dyspnoea for a few minutes and then pulse and respiration stopped. Adrenalin was injected into the heart. The pulse promptly returned, and after a few minutes breathing commenced. The operation was completed as quickly as possible. The patient, however, died twelve hours later from gradual cardiac failure.

Case 3.—While the skin was being sewn up after an operation for perforated gastric ulcer and after the anaesthetic (ether) had been dis-

continued, pulse and respiration suddenly stopped. Intracardiac injection was temporarily successful, but only for a few minutes.

Case 4.—This was a case of sudden dyspnoea, cyanosis and loss of consciousness in a patient with tuberculous peritonitis. Caffeine and camphor were injected hypodermically. In a few minutes the heart stopped. Intracardiac injection caused the heart beat to return, but only for a few minutes. At the necropsy death was found to be due to pulmonary embolism.

Intracardiac injections should be made in the fourth or fifth interspace close to the sternum, to avoid wounding the pleura. Whether the injection should be made into the muscle or cavity of the heart is not settled. A very fine needle should be used. Large ones, by the traumatism they cause, may induce reflex inhibition. Adrenalin is the only drug which has any real action, especially in arrest of the heart from chloroform. Caffeine, digitalin and camphor oil are useless. Strophanthin has much less intensity of action.

W. B. HOWELL

Indirect Methods of Advertising.—The council of the British Medical Association has adopted an important report from the Central Ethical Committee, which will therefore be brought before the representative body. The report points out that from time to time there are discussed in the lay papers topics that have relation both to medical science and policy and to the health and welfare of the public, and it may be legitimate or even advisable that physicians who can speak with authority on the question at issue should contribute to such discussions. But physicians who take this action ought to make it a condition of publication that laudatory editorial comments or headlines relating to the contributor's professional status or experience shall not be permitted; that his address or photograph shall not be published, and that there shall be no unnecessary display of his medical qualifications and appointments. There is a special claim that physicians of established position and authority shall observe these conditions, for their example must necessarily influence the action of their less well known colleagues. Discussions in the lay press on disputed points of pathology or treatment should be

avoided; such issues find their appropriate opportunity in the professional societies and the medical journals. After making all allowances for all those modes of publicity for which there may be some justification, there remain many instances that can be regarded only as gravely and unnecessarily contravening the spirit of the notice of the General Medical Council. The association is convinced that in taking up an attitude of determined opposition to these undesirable journalistic methods, it is acting in the best interests of the public as well as of the medical profession. The extension of the practice of discussing medical topics in the lay press can lead only to a competition for public notice, in which the abler and more scrupulous men would be left behind by those who are greatly inferior, to the detriment of the public, who are ill qualified to judge of the true worth of scientific opinions. The extension of the advertising habit among the profession in general would certainly destroy those traditions of dignity and self respect which have helped to give the British medical profession its present high status, and would gravely undermine the amenities and harmonious working of medical practice.

Miscellaneous

MEDICO-LEGAL

In a recent number of the *Journal of the American Medical Association* the following excellent paper appeared on the "Importance of the Roentgenograms as Evidence in Court."

"A roentgenogram is not admissible in court as evidence until after it has been authenticated. It must first be shown by one or more competent witnesses what the roentgenogram is, and that it pictures accurately what it purports to show. For this purpose a witness may testify (1) that the roentgenogram shows accurately what he saw when he looked through the fluoroscope into the body, or he may show (2) that he is skilled in the use of the roentgen-ray machine and in taking and developing roentgenograms, that he took the roentgenogram offered in evidence, or saw it taken, with the body in a stated position, with a machine he knew to be accurate and in good working order, and that from his experience he knows that the roentgenogram accurately represents the internal condition of the portion of the body roentgenographed. These two methods of authentication are, however, not exclusive; any other satisfactory evidence that establishes the authenticity and accuracy of a roentgenogram will establish its admissibility.

"A witness undertaking to establish the authenticity of a roentgenogram must be able to state how he identifies it. Unless it has been in his custody ever since it was taken, he may be made an innocent party to fraudulent substitution, or a substitute roentgenogram may be submitted to test the accuracy of his identification of the one said by him to be authentic. Accidental substitution, however, through carelessness in marking and filing is more likely, and this may happen even though the roentgenogram comes from his own files.

"To guard against the possibility of the deliberate substitution of roentgenograms and to provide a convenient and economical method of identifying them, the method recommended by Taft seems better. By this method the marks can be made to appear in the handwriting of one or more persons, and the chance of trickery or mistake is reduced more nearly to

the chance of forgery of handwriting. Taft reports that he obtained satisfactory results by using as a writing fluid a mixture of about 25 per cent of standard mucilage of acacia added to ordinary ink, used in conjunction with powdered metallic lead. By means of a heavy stub pen, the mucilage-ink mixture is used for writing the identifying marks on slips of paper. Before the mixture has had time to dry, the writing is sprinkled with the powdered metallic lead. The excess is shaken off, and a thick ribbon of lead is left enmeshed in the mucilage-ink, thus outlining in lead what has been written. The slip of paper thus marked is placed alongside the part that is to be roentgenographed, and the exposure is made in the usual way. The lead-writing appears on the roentgenogram.

"In any medico-legal case the roentgenologist must guard against being made the victim of impersonation of the alleged injured party by some one substituting for him. In any case known to have medico-legal bearings, the roentgenologist will do well to make sure that the person whom he is about to roentgenograph is the person he represents himself to be. He should be prepared, so far as may be possible, to identify in court the person roentgenographed as the same person whose condition the roentgenogram portrays.

"To reduce to a possibly irreducible minimum the chances for substitution, it might be well to have each roentgenogram identified not only by signature or finger print of the roentgenologist, but also by signature or finger print of the person who is to be roentgenographed. Identification will always be greatly facilitated and strengthened when it can be established that the roentgenogram offered in evidence has been constantly in the proper custody since it was taken; and this means under lock and key. The roentgenologist who, from the very beginning, prepares to meet all possible demands that may be made to establish the admissibility as evidence of the roentgenogram he produces will do much to save the court, counsel and himself all unnecessary difficulty and annoyance later. It is too late after the trial is under way to go back and make good any shortcomings that occurred in the beginning."

Medical Societies

At a special meeting of the Lincoln County Medical Society held at St. Catharines on Tuesday, April 7th, Dr. W. J. Macdonald of St. Catharines, Ontario, reported the results of his investigations under the title,—“Some Recent Observations on Arterial Hypertension—A Preliminary Report.”

While carrying on some investigations regarding the effect of certain extracts on the metabolism of uric acid in dogs, he observed that intravenous injection of these products produced a sharp and persistent fall in both systolic and diastolic blood pressures. In reporting his work, he stated that the hypothesis underlying his later experimental work (developing from his earlier experiments) was based on the presumption that the liver structure contained an active principle which does control blood pressure.

After repeated attempts he was successful in obtaining a liver extract which was non-toxic in dogs. He proceeded to test this material on individuals known to be suffering from persistent and long-standing arterial hypertension. He reported that thirty-three cases in all had been studied and by the use of lantern slides demonstrated the results obtained in eighteen cases. While he admitted that with one batch of extract, there was considerable “shock” in a few cases, all the others cases treated were entirely free from untoward symptoms and general symptomatic improvement was consistently shown with only one exception. The reduction of blood pressure took from one to four days to develop and the return to an abnormal level was gradual and rarely to its former magnitude even after some days and sometimes several weeks. He further reported that in more recent work he had been able to separate two fractions, both of which were much more active than the crude extract. The meeting was largely attended by the members of the County Society and by a number of representative men from the various county societies in the Niagara Peninsula.

J. HEURNER MULLIN

CANADIAN TUBERCULOSIS ASSOCIATION

PROGRAMME OF ANNUAL MEETING, MONTREAL,
MAY 14th, 15th, 16th.

Thursday, May 14th, 1925

- 9.00 a.m.—Registration.
- 10.00 a.m.—Clinic at Royal Victoria Hospital. Surgery in Tuberculosis, Dr. E. Archibald.
- 12.00 noon—Luncheon, Sun Life Assurance Company's Building.
Address of Welcome, His Worship Mayor Duquette of Montreal.
Address by Dr. A. Rousseau, Dean of Laval University, Quebec.
Welcome from medical profession of the province.
- 2.00 p.m.—President's Address.
- 2.30 p.m.—Appointment. Nomination and Resolution Committees.
- 2.40 p.m.—Papers: (Papers eight minutes each, and six minutes for discussion of each).
Dr. G. C. Brink: Travelling Chest Diagnostic Clinic.
Junior Red Cross in Nova Scotia: As a Health Education Force, by nurse in charge of the work.
Dr. A. C. Jost: Cost of Tuberculosis Work versus Evaluated Gain from Life Extension.
Dr. A. Lessard: Three Rivers Demonstration.
Dr. Paul M. Andrus: A Clinical Study of Tuberculin Skin Hypersensitivity.
Dr. A. H. Baker: Alberta Survey.
Dr. Bruce Hopkins: Pain; Pleural New Growth.
Dr. R. G. Ferguson: The Most Important Agencies in a Provincial Campaign against Tuberculosis.
Dr. A. H. W. Caulfield: Modern Advances in Diagnosis.
Dr. H. A. Farris: Atelectasis of the Lung.
- 4.30 p.m.—Election of Officers and other business.
- 6.30 p.m.—Annual Dinner—Lieutenant-Governor.
- 8.00 p.m.—Public Meeting: Hon. L. A. David; Dr. Edward R. Baldwin.

Friday, May 15th, 1925

- a.m.—Clinical Papers: Papers, twenty minutes; discussion, ten minutes.
- 9.00 a.m.—Four papers (thirty-minute period; no discussion) by doctors from Laval University, Quebec.
Dr. A. L'Esperance: Infection in the Child.
Dr. G. Audet: Special shadows of the mediastinum in x-ray of children.
Dr. A. Laberge: Pneumo-Thorax—Demonstration of a very simple apparatus.
Dr. O. Leclerc: The value of iodine injection in the bronchial tube for diagnosis and treatment of tuberculosis.
- 9.30 a.m.—Dr. D. A. Stewart: The Medico-Surgical Boundary Line in the Treatment of Pulmonary Tuberculosis.
- 10.00 a.m.—Dr. A. H. Pirie: X-Ray in the Selection of Cases for Surgical Procedure.
- 10.30 a.m.—Dr. J. Meakins: Physiological Results of Artificial Pneumo-Thorax.

- 11.00 a.m.—Dr. Leo Pariseau: Les Rayons X dans le diagnostic de la Tuberculose Pulmonaire.
- 11.30 a.m.—Dr. A. D. Lapp: Treating Tuberculosis in the Dry Climate Belt.
- 12.00 noon—Dr. H. P. Wright: The Value of the Ultra Violet Ray in the Treatment of Tuberculosis.
- 12.30 p.m.—Executive Luncheon.
- Afternoon—Medical Social Service and Tuberculosis Papers*, fifteen minutes, discussion five minutes
- 2.30 p.m.—Work of a Tuberculosis Dispensary as exemplified by Rotary Club of Vancouver: Dr. H. A. Rawlings.
- 2.50 p.m.—Dr. E. S. Harding and Dr. J. A. Jarry to discuss, five minutes each.
- 3.00 p.m.—Dr. J. E. Dubé: Education in the Home and its needs.
- 3.15 p.m.—Miss H. Chagnon: Need for Home Follow-Up Work, including Education in the Home.
- 3.30 p.m.—Miss Hall and Miss Moag to discuss, five minutes each.
- 3.40 p.m.—Tuberculosis in the Child; early detection and prevention (Schools, Preventoria, Summer Camps), Dr. Elliott.
- 3.55 p.m.—Dr. G. Lapierre and Dr. W. J. Dobbie to discuss, five minutes each.
- 4.05 p.m.—General Discussion.
- 4.30 p.m.—Visit, Bruchési and Royal Edward Institutes.

Evening

Medical Meeting, under the auspices of La Société Médicale de Montréal: Dr. Willard B. Soper, Introduced by Dr. C. D. Parfitt and Dr. H. A. Lafleur.

Saturday, May 16th, 1925

Visit to Three Rivers.

CANADIAN SOCIETY FOR THE STUDY
OF DISEASES OF CHILDREN—
ANNUAL MEETING, OTTAWA,

June 5th and 6th.

Arrangements have been made with the Chaudière Golf Club to have all sessions held there. It will be possible for at least eighteen or twenty members to reside at the club during the sessions. A motor bus will meet the morning trains from Toronto and Montreal and take members direct to the club on arrival. The club is about five miles out of the city on the Aylmer Road in Quebec. Breakfast will be served at the club at eight fifteen so that the morning session can start promptly at eight forty-five or nine o'clock. Friday will be given over entirely to papers. Dr. Campbell hopes to have the Society as his guests for dinner Friday night. The annual dinner will take place on Saturday night. Saturday morning will also be devoted to papers and business. Saturday afternoon will be given over entirely to golf. Members may also be able to play golf after four-thirty on Friday afternoon.

Dick Test and Immunization against Scarlet Fever.—O. B. Nesbit, director of medical inspection, public schools, Gary, Ind., reports on 2,162 Dick tests, 927 in males and 1,235 in females. Among the males, 40 per cent were positive, 9 per cent slightly positive and 50 per cent negative. With the females, 40 per cent were positive, 12 per cent slightly positive and 48 per cent negative. Seven per cent reported having had scarlet fever, and of these, 28 per cent were positive, 12 per cent slightly positive and 60 per cent negative. Fifteen per cent of the total school enrollment was tested. There have been forty-one cases of scarlet fever reported to the board of health since the opening of school, in September. None of these have been among the Dick negative pupils and two were among the Dick positive group. The severest reactions have been three cases of urticaria, two being in adults. This developed soon after the administration of the toxin. One

pupils had a rash that was ascribed to the toxin by the family physician. Nesbit concludes that the Dick test appears to be a satisfactory method of determining persons susceptible to scarlet fever. Immunization without previous tests of any group of school children is not justified as a routine. The three doses of scarlet fever toxin given appears to immunize about 65 per cent of the pupils. The group found to be still slightly positive on retests is probably largely immune; but, to determine this, final tests with controls are needed. No case of scarlet fever has developed so far in any person pronounced probably immune. Three cases have developed in persons told they were Dick positive. No immunity against German measles is developed after scarlet fever toxin injections. Some data will be available on this point later. Larger immunizing doses of scarlet fever toxin, such as we have now begun to use, are desirable.—*Jour. A. M. A.*, March 14, 1925.

Obituaries

Dr. Andrew Armour Robertson died in Montreal on March 25th, after only three days illness, from a streptococcus septicæmia developing from an apparently benign throat infection.

Armour Robertson was born fifty-four years ago in Montreal, of Scottish parents, and passed through the Montreal High School and the Faculties of Arts and Medicine in McGill University, in each of which he led his class, graduating in medicine in 1894 and winning the Holmes gold medal. He was for two years house physician in the Royal Victoria Hospital, later studying for some time in Europe. On his return he settled in Montreal and took up medical practice and joined the Department of Physiology in McGill University in which he was lecturer for a number of years. Later he was appointed an outpatient physician and associate in neurology in the Montreal General Hospital, and at the time of his death he was associate physician to the hospital and lecturer in medicine in McGill University.

He was a man of sound learning and great wisdom. He observed keenly and reasoned logically, and his opinion always carried weight with his confrères. He had been a resident physician with the late Professor James Stewart, and in his quiet humour and wise economy of words, was a true Scot as was his former chief.

He was a man before he was a doctor, and few men of his generation had as many friends. Modest and unassuming, he was welcome everywhere. He was prominent in Masonry, and was a keen golfer and fisherman. His character was beyond reproach and his motives were above suspicion. He gained the affection of his colleagues, the confidence of his patients and the respect of the community. At his funeral from Knox Crescent Church, of which he was a member, the large building was filled with men from every walk in life gathered in honour to his memory.

Dr. Robertson is survived by his wife who was Miss Helen Featherstonhaugh of Montreal and by their two daughters, also by his brother Mr. David Robertson of Montreal, and Miss Mildred Robertson of Campbellford, Ontario.

A. H. GORDON

Dr. Richard I. Mattice, of 246 Kennedy Street, Winnipeg, died in Victoria Hospital on March 31, at the age of seventy-eight years. A graduate of the London Hospital, Dr. Mattice was associated in practice in Winnipeg for some years with the late Dr. J. S. Gray and had a large practice particularly in the field of gynaecology. The remains were forwarded to Cornwall, Ontario, for interment. At the luncheon of the Winnipeg General Hospital staff on April 2nd, a resolution of condolence to the surviving relatives was passed.

Dr. Alexander Taylor died in Goderich on March the 28th in his seventy-ninth year. Coming to Goderich in 1877, a graduate of the Toronto Medical College Dr. Taylor practiced medicine for nearly fifty years, taking at the same time an active interest in politics and in educational affairs.

Dr. Alex N. Hayes was buried in Sarnia on March 31st. Graduating in Toronto in 1890 Dr. Hayes had been actively engaged in practice for over thirty years and was well known in Sarnia and throughout Western Ontario. He had long been interested in city affairs and in the progress of education.

Dr. Peter Douglas McIntosh died in Rochester, Minn. on March the 22nd. Dr. McIntosh was a gradu-

ate of the University of Toronto and during the war he served with the 127th York Rangers and also with the R.A.F.

Dr. John Witmer Rolph, a son of the late Dr. John Rolph founder of the old Rolph School of Medicine at Toronto, died recently. Dr. Rolph had practiced for years in the South Sea Islands, but in recent years he has been living with his sister Mrs. Frances Hayward in Cincinnati. He was eighty-two years of age.

Dr. G. T. Jones died in Webbwood on March the 17th in his sixty-second year.

Dr. J. S. Brookman, of Coronation, died March 6th, following an illness of two days' duration. He was born in New Glasgow, Nova Scotia, and was fifty years of age. Following a course of study at Dalhousie University, he attended the university and Bellevue Hospital Medical College, New York, where he graduated. After practising in Sydney, Cape Breton, and in Newfoundland, he came to Alberta, settling in Coronation in 1916. He was highly thought of in this community in which he practised, and showed marked ability in the practice of his profession. He leaves a wife and one child.

Dr. John Ferguson Black, for several years a leading member of the medical profession in Halifax and an eminently successful surgeon, died at Stone, Somersetshire, England, on the 24th of March. He was a son of the late Dr. Rufus F. Black (who was also prominent in the medical circles of Halifax), and graduated at the College of Physicians and Surgeons of New York in 1868. Dr. Black held several appointments in the faculty of the Halifax Medical College, the last being that of Professor of Surgery. He was also a visiting surgeon to the Victoria General Hospital. His skill and resourcefulness as a surgeon, his unusual ability as a teacher, and his quiet, kindly manner gained for him the esteem and affection of all with whom he came in contact. On account of indifferent health, he retired from practice in 1902 and thereafter made his home in England. Older members of the profession throughout Canada will learn of his death with regret, as during his active years he was a frequent visitor to medical centres and made many friends wherever he went. In his will, Dr. Black made substantial bequests to a number of Halifax institutions, including the Halifax Dispensary, the Halifax Infirmary, the Victoria General Hospital and the medical school. The residue of the estate, amounting to upwards of \$50,000.00 is entailed during the life time of four surviving sisters, but on their death is to go to the Children's Hospital, of Halifax.

Dr. J. Anderson Springle, chief surgeon of the Western Hospital, Montreal, died at the Western Hospital April 8th, after a long illness. Last December he underwent an operation which was successful, but later complications ensued and he slowly declined. Dr. Springle, who was well known in the medical profession throughout Canada, was in his sixty-first year. He was always a very active man in his profession and a keen student not only of medical matters, but of things of general interest. In his youth he was a fine athlete and was prominent in football, hockey, and gymnasium circles. He was born in Montreal, his father being the late James Key Springle, C.E., and his grandfather the late Dr. Wm. Hall, F.R.C.S., of Quebec. He was educated at the Montreal High School, whence he proceeded to McGill University where he made a brilliant course in medicine. He graduated as an M.D. from McGill in 1888 and went

to the Montreal General Hospital as house surgeon, under Dr. F. J. Shepherd. He was for a time surgeon to the outdoor department of the hospital and earned a reputation as a capable surgeon. In 1896 he was appointed as demonstrator in anatomy at McGill University and in the following year he was appointed lecturer. This post he held until 1902 when he was appointed lecturer in applied anatomy. During the year 1900 he acted for Dr. F. J. Shepherd as Professor of Anatomy at McGill while the latter was in Cuba

with the late Sir William Van Horne. He continued as lecturer in anatomy at McGill University until 1909 when he resigned. During this period he also continued his work as surgeon at the Montreal General Hospital. After leaving the Montreal General Hospital some years ago he joined the staff of the Western Hospital where he was latterly appointed chief surgeon. His work there was marked by much success as he was a skilled diagnostician as well as a good operator.

The Peripheral Forms of Epidemic Encephalitis.—L. Bériel and A. Devic (*Lyon méd.*, January 25th, 1925, p. 112) describe a new form of epidemic encephalitis which does not appear to have been isolated before, and does not in any way resemble the ordinary forms of the disease. The virus in these cases seems to attack exclusively or principally the peripheral motor and sensory neurons, and the affection appears to correspond to a meningo-radiculoneuritic process. The onset may be sudden, the patient becoming paralytic within a few hours, or it may take a few days to develop. Painful symptoms may occur at this stage. At the height of the disease the affection presents the ordinary phenomena of polyneuritis, but the most striking feature is the widespread character of the paralysis, which often involves the sphincters, upper limbs, and sometimes even the face, although this distribution bears no relation to the intensity of the motor defect. Pressure on the nerves and muscles is generally painful. On the other hand, no anaesthesia was ever noted. Lumbar puncture shows that a meningeal reaction is almost constant. The course of the disease was always favourable, and the patients recovered completely without any paralysis or atrophy. The authors remark that this is a very important fact, because the great difficulty in diagnosis is to eliminate the painful forms of acute poliomyelitis. At the onset the diagnosis will depend partly on the intensity of the general symptoms, which is usually less in polyneuritis than in poliomyelitis, although there is no absolute rule. The most important element, however, in the diagnosis is the much wider diffusion of the paralysis in polyneuritis and especially the persistence of this wide-spread paralysis. Whereas in poliomyelitis certain groups of muscles rapidly recover their normal function, while others undergo a rapid atrophy,

in polyneuritis there are only slight differences in the impairment of the various muscle groups affected and the atrophy is always the same—late in development and of very slight degree. The diagnosis is nevertheless usually difficult at first, and the authors have often had to wait several weeks until a localized atrophy or complete recovery decided the nature of the case.
—*Brit. Med. Jour.*, Apr. 4, 1925.

Meningitis in Varicella.—G. de Toni (*Il Poli-clinico*, Sez. Prat., November 3rd, 1924, p. 1434) records the case of a girl, aged 3, who in the desiccation stage of varicella developed convergent strabismus, slight nuchal rigidity, Brudzinski's two signs, Babinski's sign on the left side, and marked cutaneous hyperesthesia. The cerebro-spinal fluid escaped under pressure; it was xanthochromic, and not quite clear. The cells numbered 78 per cubic millimetre; 56 per cent were lymphocytes, 14 per cent polymorphonuclears, and 30 per cent ependymal cells. The albumin was 0.58 per cent. There was a slight deficiency of sugar in the cerebro-spinal fluid. The Paudy, Bovery, Nonne-Apelt, and Weichbrodt reactions in the fluid were positive, and the Wassermann reaction negative. No tubercle bacilli were found in the deposit, and von Pirquet's and the guinea-pig inoculation tests were negative. A provisional diagnosis of tuberculous meningitis was made, but apart from left internal and external ophthalmoplegia complete recovery took place. In the absence of any other cause, de Toni regarded varicella as responsible for the meningitis in this case. Only four other examples of meningitis due to varicella are on record, reported by Mya, Koplik (two cases), and Lenoble and Thiellement respectively. Koplik's patients recovered, while the others died.

Association Notes

THE ANNUAL MEETING IN REGINA—

JUNE 22nd - 26th

Once more, the Regina Medical Society extends a most cordial invitation to members of our profession throughout Canada to visit the Saskatchewan capital in June next. Come and have a real holiday. Come and meet again the friends of other years, and at the same time attend the sessions of an Annual Medical Meeting which will be unexcelled.

Preparations for the fifty-sixth annual meeting of the Canadian Medical Association in Regina in June next, are proceeding rapidly, and in plenty of time for the big event.

Inquiries, and requests for reservation of accommodation are coming in from many quarters, and a full attendance is assured, if one can judge from information to date.

The middle western provinces will be strongly represented, while private reports from Vancouver indicate that the coast province will send a strong delegation down to Regina for the meeting.

From eastern Canada inquiries show that much interest is being taken, many men are planning on a June holiday—possibly to the Pacific Coast or the National Parks—with a stop-over in Regina for the annual meeting, as the main attraction.

The various university alumni gatherings, which are being planned, are going to be popular. The local committees here which have begun correspondence with the universities, and former classmates, are receiving a most encouraging response. Quite a number of graduates of Canadian universities, now residing in the United States, have stated they will be in Regina June 22nd to 26th, to renew the associations of student days.

The General Secretary, Dr. Routley, arrived in Regina on the 25th instant for conference with the local executive regarding all arrangements for the convention. He met the members of the Regina Society at dinner on the 25th, following which, details concerning the programme and others were fully dealt with. A synopsis of the scientific programme includes, as will be

noted, the names of some eminent men from Great Britain and the United States as well as many well known Canadians—and undoubtedly these gentlemen will provide a series of addresses of assured interest to every man fortunate enough to hear them. Some of the speakers will address the convention twice, although full particulars cannot be published in this issue.

The social side of the convention will receive all due consideration. Visitors will receive a whole-hearted western welcome. All city clubs will be open for the entertainment of the guests and plenty of relaxation will be provided as a respite from the strenuous scientific sessions.

At least one of the Canadian railways will shortly circularize the whole profession with information concerning routes of travel, points of interest in the west, etc., and a little later the Executive Committee will be able to mail the complete programmes to all members of the Canadian Medical Association, and as many others as possible.

It may be noted that the first two days, namely Monday and Tuesday, June 22nd and 23rd, are devoted to business meetings of the Council, while the actual convention programme begins on Wednesday, June 24th and continues until Friday, June 26th.

PAPERS ALREADY PROMISED FOR THE MEETING

Dr. Chas. Hunter, Winnipeg, "Psycho-Therapy of General Practitioner."

Dr. W. T. Connell, Kingston, "Points in the Prognosis of Chronic Cardiac Disease."

Dr. David MacKenzie, Montreal, (1) "Bladder Neoplasms"; (2) "Mechanical Factors in Renal Infections."

Dr. J. G. Fitzgerald, Toronto, "Recent Advances in Public Health."

Dr. John Amyot, Ottawa, "The Relation of the Profession to the Public."

Prof. John Fraser, Edinburgh Paper Expected.

Dr. Alexander Primrose, Toronto, "Gastric Surgery."

Dr. Roscoe Graham, Toronto, "The Differential Diagnosis and Management of Upper Abdominal Disease."

Dr. A. T. Bazin, Montreal, "Lung Abscesses; Survey of Treatment."

Dr. L. J. Austin, Kingston, "The Pathology and Treatment of Gall Stones."

Mr. Carson, London, Eng., titles to come.

Dr. Perry Goldsmith, Toronto, "Inflammation of the Middle Ear and Complications that may arise."

Dr. Alan Brown, Toronto, baby clinic—one hour.

Dr. A. J. Pacini, Chicago, "The Nature of Physiotherapy."

Dr. G. E. Richards, Toronto, "X-rays and Radium in the Management of Cases of Breast Carcinoma."

Drs. Stewart and Pritchard, Nanette Sanitorium, "Tuberculous Enteritis."

Dr. Helen McMurchy, Ottawa, "Maternal Mortality."

Dr. J. S. Pritchard, Battle Creek, "Some points in Diagnosis of Pulmonary Affections"; "Treatment of Bronchitis."

Dr. MacKinnon, Winnipeg, "Bipp in the Treatment of Osteomyelitis."

Dr. Sharpe, Brandon, title to be submitted.

W. A. DAKIN

The General Secretary was privileged recently to visit the Regina District Medical Society which has charge of our forthcoming annual meeting to be held in Regina, during the week of June 22nd.

Under the able leadership of our President-elect, Dr. David Low, the profession of Regina have been working since last summer and those who attend the annual meeting will not fail to recognize how thoroughly their hosts have handled their task; and, not only the medical profession, but the lay people of the city and province, have signified their willingness and desire to co-operate in making the week a most happy and successful one. The moment a member of the Association arrives in Regina, he will be conscious of a right royal welcome, and western hospitality will be accorded him in

full measure throughout his stay. Splendid accommodation is assured for all who will attend; and a Reception Committee will meet all incoming members and see that they are made comfortable.

The auditorium of the Normal School, where the sessions are to be held, affords splendid facilities for our purpose. Standing close by, is Regina College, where the official luncheons will be served. The place of meeting is in close proximity to the hotels and may be reached quite easily.

The Scientific Programme has been designed very largely for the general practitioner. There will be papers, too, of interest to the specialist in every line. There are to be no sectional meetings, which means that the entire programme of addresses and clinics will be available to all. A concentrated post-graduate course awaits you.

Members are advised to make their reservations for accommodation early, and do not forget to state whether or not you will be accompanied by your wife. Communications should be addressed to Dr. M. R. Bow, local Secretary, General Hospital, Regina. The Regina hostesses have been just as aggressive with their plans as have their husbands, and the visiting ladies may anticipate a very happy time.

From point of view of programme, arrangements, accommodation, and hospitality, the fifty-sixth annual meeting bids fair to be one of the very best in the history of the Association. It is hoped that the members in large numbers will plan to attend. . . . T. C. ROUTLEY

Notice of Motion to amend By-laws, by Dr. A. T.

Bazin

"The fee for membership in the Canadian Medical Association shall be \$2.00 for the first year after graduation, \$5.00 for the second year after graduation, and the full fee thereafter, except in the case of full time laboratory workers, when it shall not at any time exceed \$5.00."

Medical News from the British Empire

GREAT BRITAIN

The future of national health insurance in Great Britain is engaging the close attention of the medical profession, which cannot again be accused of passively watching developments without endeavouring to take some part in their direction. The position now is that a Royal Commission has been appointed to inquire into the working of the national health insurance scheme. The British Medical Association has drawn up a memorandum of evidence to submit to this commission, the evidence being the result of arduous and prolonged work on the part of the various sections of the Association throughout the country. In this memorandum it is pointed out that the promotion of national health is not necessarily best carried out by an organized national health insurance scheme. There are several directions in which corresponding expenditure would probably give more satisfactory returns, such, for example, as proper housing; town planning with the proper provision of open spaces and recreation facilities; smoke abatement; pure milk supplies; education and the aiding of medical research; regulation of the sale of alcoholic beverages; destruction of vermin.

Still, if a national health insurance scheme is organized, it is suggested that regard should be had primarily and constantly to the maintenance of health and the prevention of disease, not merely the alleviation or cure of morbid conditions. This would call for increased attention to prevention, and the close co-operation of physicians and health officers.

It is realized that the existing insurance scheme has really only had a short time of trial. It was first established in 1913, but there was then a strong antagonism to it on the part of a large proportion of physicians; and soon afterwards came the dislocating effect of the war. Nevertheless, in 1922 it was admitted by the Association that "the measure of success which has attended the experiment of providing medical benefit under the national health insurance acts system has been sufficient to justify the profession in uniting to insure the continuance and improvement of an insurance system." It can be shown that whole classes of persons now receive a real medical attention which they did not receive before; the proportion of physicians to the population in densely populated areas has increased; the medical attention given is superior to that formerly given in even the best of old clubs; illness is coming under observation and treatment at an earlier stage than formerly; and, in a general way, the work of physicians has been assuming a tendency towards prevention.

On the other hand, under present conditions, there is apt to be at times (as during epidemics) a very heavy strain on physicians. There is also a heavy burden to be borne as regards the filling out of government returns in connection with the insured: the constant dread of transgressing rules and regulations outside of his professional duties, is detrimental to his work.

It is therefore suggested that certain broad principles should be adopted as fundamental in any scheme of national health insurance. The benefits should be available only for those who could not obtain them without the help of the insurance scheme. The conditions under which medical attention is given should as far as possible, be similar to those of private practice. There should be medical representatives in association with administration of the scheme, and judg-

ment as to questions of professional conduct and treatment should be in the hands of purely professional bodies. Remuneration should be not less than that which would be produced by private practice of corresponding extent and responsibility, so as not to prejudice the continuous supply of the best type of physician.

If these conditions are not secured there will be danger of certain grave evils arising. The profession will be called on to do far more work than they can properly perform; present professional tradition will be lost, and the relationship between the patient and his physician will be changed, to the prejudice of the patient; and, work under the insurance scheme will be looked on as secondary in importance when compared with other branches of medical work.

One question requiring attention is whether medical attention should be given to the dependents of the insured. A certain section of the profession are strongly against such inclusion, even of the carefully selected number suggested: they hold that in the densely populated areas the practitioners would have no private practice left at all, and that the whole of their work would become contract work. Then there was the very thorny question regarding the wage limit, by which it was proposed to select those who should or should not be allowed insurance privileges; for the memorandum was against including all the dependents and proposed that the selection be made according to the height of the wage earned. This would mean constant inquiry into the size of incomes. Again, it was to be feared that if the Royal Commission found that the profession was willing to take on a proportion of the dependents the recommendation would finally be made to the government that all dependents be included.

Views of this nature clearly showed that there still was strong opposition to the further development of the national insurance scheme, but at the meeting held for the discussion of the memorandum, there was a decisive majority in favour of the proposals outlined in it.

ROYAL SOCIETY OF MEDICINE

NICHOLS PRIZE—SECOND AWARD

In accordance with the will of the late Dr. Robert Thomas Nichols, the Royal Society of Medicine offers every three years a prize of £250, open to any British subject for the most valuable contribution towards "The Discovery of the Causes and the Prevention of Death in Childbirth from Septicæmia." Work submitted for the second award must reach the Secretary of the Society (1 Wimpole Street, London, W.1.) not later than October 1st, 1927, and must be marked "Nichols Prize." It must be typewritten or printed, in English, and accompanied by the name and address of the author. Work already published may be submitted, provided that publication was not earlier than October 1st, 1924. If no work of sufficient merit be submitted, the prize will not be awarded.

The following extract is taken from the report of proceedings of a meeting of the Council of the British Medical Association:

The Chairman said that the Council would be glad to learn that the President had received an invitation

from the Ontario Medical Association to attend its annual meeting in May next, and had been asked to deliver an address before the Academy of Medicine of Toronto, preferably developing the subject of conservative surgery, which he emphasized in his address from the chair of the Association at Bradford last July. The President had accepted the invitation; he would, of course, represent the Association officially during his visit to Canada, and he would take from the Council its best wishes to the Canadian friends. (Applause). The Canadian Medical Association, of which the Ontario Medical Association was a constituent body, was carrying out in every way possible the

spirit of the affiliation which had resulted from the visit of Sir Jenner Verrall and the Medical Secretary to Canada last year.

Sir Jenner Verrall congratulated the President on his opportunity of meeting the people in Canada, and felt sure that Mr. Basil Hall's experience would be as gratifying as his own had been.

The announcement is made that Sir Humphry Rolleston, Bt., K.C.B., has been appointed to be Regius Professor of Physic in the University of Cambridge in succession to the late Sir Clifford Allbutt.

AUSTRALIA

A recent leading article in *The Medical Journal of Australia* contains the following comments on the standards of surgical practise in Australia:

"During the past few years a movement has been started in Australia having for its object the raising and maintaining of the standard of surgical practice. The attention of the members of the medical profession has been directed to the constitution of the American College of Surgeons and quite recently invitations have been addressed to the profession in Australia by this college to induce recognized surgeons to be given the advantages of membership. Australian surgeons entertain feeling of goodwill and friendship towards their American colleagues, but the majority realize that it would be invidious were a foreign organization allowed to gain any sort of control over the conditions of practice in Australia. The American College of Surgeons has introduced an admirable set of regulations for the standardization of hospitals and it also endeavours to give a guarantee to the public of the competence of its members as surgeons..... But we venture to

suggest that it would require an extraordinary amount of determination and pluck on the part of the authority to carry these rules into effect."

The article goes on to deal with the question of the regulation of surgery by the British Medical Association, and points out the many difficulties which must be faced in the carrying out of hospital standardization. As regards the giving of degrees to the more highly trained surgeons it is remarked that "if the public were educated to differentiate between the practitioner capable of performing the many duties involved in general practice and the highly trained surgeon whose competence to perform major operations is recognized, it would be a hazardous matter to refuse to grant the necessary distinctions to an applicant of doubtful ability.".... "We fear that in the future as in the past the public must be warned that if they wish safety in surgical treatment, they should entrust themselves to practitioners who have been chosen to occupy the positions of honorary surgeons to the great public hospitals. The mere possession of a degree or qualification in surgery is not in itself a sufficient guarantee."

H. E. MACDERMOT

News Items

GENERAL

United States Public Health Service in Conference Expresses New Viewpoint on the Treatment of Syphilis.—The indiscriminate use of the word "cure" in the treatment of syphilis should be discontinued and in its stead the patient should be made to think merely of an arrested condition as in tuberculosis. According to a report just made public, such is the opinion expressed by the conference of the United States Public Health Service and state venereal disease control officers last December at Hot Springs, Arkansas. This conference advised that persons undergoing treatment for syphilis should expect and seek observational control at appropriate intervals, and under proper medical care, throughout a period of years, instead of considering themselves cured after a few months' or a year's treatment in order to avoid the late involvement of the heart, blood vessels and nervous systems. The adoption of this attitude by the conference is disclosed by the report of the Hot Springs meeting which has just been published in pamphlet form by the Division of Venereal Diseases of the United States Public Health Service. The report says that medical responsibility for the health of a patient who has

acquired syphilis or gonorrhœa is not discharged by mere routine treatment during the infectious stage, but extends to the prevention of crippling, degenerative lesions during the patient's later life. One of the first essentials to such prevention is complete observational control with periodic re-examination. It is urged that such systematic checking must be carried out through a period of years. Such a course is necessary, says the report, because a complete relapse of a patient treated for syphilis may occur in any case, however, apparently hopeful at the start. Three years may be prescribed as the average period of treatment for the early case of syphilis before it is placed on observation. Five years has been widely accepted as the lapse of time required to reduce the infectious possibilities to a point where marriage may be contemplated.

The American Proctologic Society will meet at the Ambassador Hotel, Atlantic City on May 25th and 26th next. The preliminary programme announces that the following subjects will be discussed: Anæsthesia in rectal surgery; ano-rectal fistulae; hemorrhoids and cancer.

NOVA SCOTIA

The final professional examinations of the Provincial Medical Board begin on the 30th of April.

Arrangements are being made to establish a branch of the Victorian Order of Nurses at Kentville.

Dr. John Stewart, of Halifax, has sailed for England and will spend some months in the British Isles and on the Continent.

Dr. A. F. Miller, medical superintendent of the Nova Scotia Sanatorium, recently underwent a surgical operation from which he has happily made an excellent recovery and is again at his post at the sanatorium.

Dr. Victor O. Mader has returned from a period of post-graduate study in Europe, and is now associated in practice with his father, Dr. A. I. Mader, Halifax.

The March meeting of the Osler Medical History Club was held at the residence of Dr. Alan Curry. Dr. Curry presented an exceedingly interesting and comprehensive paper on Claude Bernard, which elicited a fine discussion.

Dr. F. W. O'Connor, of the Division of Medical Education, Rockefeller Foundation, was a recent visitor to Halifax, when he made a careful inspection of the facilities for teaching medicine at Dalhousie University.

Dr. Victor G. Heiser, of the International Health Board, Rockefeller Foundation, spent a few days in Halifax in the latter part of March. While in the city he was tendered a reception at the Dalhousie Health Centre, where he met the members of the Dalhousie faculty of medicine and the students of the graduating class.

The Halifax Branch of the Medical Society of Nova Scotia met on March 25th to listen to a paper by Dr. M. T. Sullivan, of Glace Bay, in which he recounted some of his experiences during twenty-five years of practice in the colliery town. In his extensive practice he has met with many unique cases, especially of a surgical nature, and his address bristled with conclusions drawn from his experiences. Dr. Sullivan's address was greatly enjoyed, and provoked an excellent discussion. A clinical meeting of the branch was held at the Children's Hospital on April 8th. Dr.

Carney presented three cases of celiac disease and one case, a child aged seven, in which the toes had begun to "drop off" at the age of three, for which no satisfactory explanation could be offered. Dr. Acker showed a girl aged ten, who had suffered from contractures of legs and arms since birth and had not been benefited by tenotomies, but who was improving rapidly under extension and manipulation. He also showed a mentally dull boy with spastic paralysis, for whom little could be done on account of the boy's inability to co-operate in treatment. Dr. Graham demonstrated three cases: one that of a child showing obscure symptoms following an injury; one, a case of multiple arthritis; and one a case of probable lupus. Dr. Mack presented a child with several discharging sinuses, which were thought to be syphilitic and which were improving under antisyphilitic treatment. Several members participated in the discussion of the cases. At the conclusion of the programme, the members were treated to daintily served refreshments, by the hospital board.

The report of the provincial health officer, for the year which ended September 30, 1924, was recently presented to the legislature. In this report, Dr. Jost points out that the proportion of the population of Nova Scotia between the ages of nineteen and forty-four is considerably less than in the rest of Canada. As the mortality rate at these ages is lower than at either earlier or more advanced ages, the crude death rate of Nova Scotia must necessarily be higher than that of the provinces which have a more favourable age-distribution of population. Dr. Jost points out, however, that the efforts of late years, more vigorous than those formerly in vogue, have led to substantial reductions in both the crude and the standardized death rates. For 1923-24, the crude rate is given at 12.0; the standardized rate at 11.4. A number of charts are presented which show lessened prevalence of the commoner communicable diseases, including tuberculosis. On the other hand the cancer death rate is increasing, and the same is to be said of the puerperal death rate. Note is made of the several activities of the department, particularly in respect of public health nurses, county health clinics, venereal disease clinics, and educational work. The laboratory had an unusually busy year, despite the disadvantages occasioned by the reconstruction and enlargement of the laboratory building. In the March issue of *Public Health Notes*, the general death rate for 1923-24 is given as 12.5; the infant mortality rate as 92.3; and the tuberculosis death rate at 125.

W. H. HATTIE

QUEBEC

A school of Applied Social Hygiene, has been opened in Montreal at 655 Demontigny Street East. The Provincial Government of Quebec, the City Council of Montreal, the Anti-Tuberculosis and General Health League of Montreal and the Metropolitan Life Assurance Company have united in making it financially possible for the University of Montreal to open this school, and, in the words of Mgr. Piette, rector of the university, "Where these friends have generously assured the financial success of the venture, the university will in return give from the uttermost depths of its learning and scientific talents."

Dr. Paul Ostiguy, Major, A.M.C., who is a member of the Medical Board of the French Consulate, has

been created Chevalier de la Légion d'Honneur for services rendered during the war.

Dr. H. H. Cheney, assistant in the x-ray department of the Royal Victoria Hospital, Montreal, for the last eleven years, has been appointed to take charge of the x-ray and physiotherapy department of the Civic Hospital at Ottawa. The Civic Hospital, which is contemplating increasing its capacity from 600 to 1,000 beds, is one of the largest in Canada. Dr. Cheney is a graduate of Eastern Maine Seminary, the University of Maine, and McGill, where he received his M.D., C.M. in 1914. During the war Dr. Cheney was in charge of the x-ray department at the Royal Victoria Hospital, in the absence of Dr. A. Howard

Pirie. In 1918 he was released to go overseas and received an appointment in the Petrograd Hospital in London, where he distinguished himself in his work among the wounded soldiers. Returning to Montreal in 1923, after visiting the x-ray department of the largest hospitals in Europe, he resumed his work at the Royal Victoria Hospital. Dr. Cheney was entertained at the University Club by his colleagues.

Dr. W. Patterson, as member of the staff of the Royal Victoria Hospital, Montreal, for the past nine years, and this year's winner of the Travers Allan Scholarship, left recently for Liverpool, where he will take up post-graduate study under Sir Robert Jones. Dr. Patterson was entertained by the Kiwanis Club and by the members of the hospital staff prior to his departure.

A new tuberculosis dispensary will be opened at 1848 Notre Dame Street West and operated by the Royal Edward Institute in conjunction with the Provincial Government. This marks another step in the campaign to establish free clinics for the treatment of tuberculosis, outlined by the Government.

Dr. L. A. Chabot, of Verdun, formerly public health officer of Sherbrooke and Shefford district has been appointed Inspector of Health and Sanitation for the district of Montreal.

Cooks, chefs, waiters and waitresses and all other persons handling food in restaurants and hotels will be obliged to have a medical certificate attesting their freedom from contagious diseases, if a motion, to be presented at the next meeting of the city council by Alderman Gabias, is carried. This would create a commission comprising the doctors on the council and others to draft a by-law with the above in view. Alderman Gabias bases his requests on complaints about the sanitary conditions of some eating places in the city.

A conference of representatives of the Montreal Council of Social Agencies and Dr. A. Lessard, Director of the Bureau of Public Charities was held in

Montreal at the request of the Provincial Secretary, Hon. L. A. David, to discuss details in connection with the proposed institution for the care and education of the feeble-minded. Satisfactory progress on this matter was reported by the Council representatives. The extent to which this problem hampers the work of children's institutions is evidenced by the fact that examination of 231 children from five institutions showed fifty-four to be retarded and ninety-nine mentally deficient. At present there is no provision whatever in this city for the special care and training required by such cases. The Out-Patient Psychiatric Clinic at the Royal Victoria Hospital, is also operated by the Mental Hygiene Committee, and out of 701 patients examined, 321 were found to be mentally deficient. This condition constitutes an entirely different problem from that of insanity, which is a disease and must be treated in mental hospitals. That many of the mentally deficient are capable of becoming assets to the community if properly trained in manual tasks and subjected to the discipline of performing routine tasks, is the statement made by Drs. G. S. Mundie, A. G. Murphy, and other specialists.

The Medical Report of the Montreal Maternity Hospital for 1924, prepared under the direction of the chief obstetric physician, Dr. W. W. Chipman, showed several outstanding features—the remarkably small maternal mortality (two in 1,408 confinements), the marked decrease in fetal mortality, especially in the intra-partum group, the large number of cases treated, 1,517, which is the largest total reached in the history of the hospital. During the year there has been little change in the routine technique of the hospital. The report states also that there was an increase of thirty-nine babies and thirty-nine mothers in the attendance at the post-natal clinics and notes the splendid assistance given by the paediatricians on the staff of McGill University. There was also an increase in the attendance at the several pre-natal stations in the city. The report acknowledges the splendid co-operation afforded in the post-natal work by the Victorian Order of Nurses. The average high cost of attendance upon patients continues to be about the same as during the preceding year.

GEORGE HALL

ONTARIO

On March 12th, Dr. E. R. Secord addressed the Brant County Medical Society at Brantford, his subject being "Fractures."

At a meeting of the North Waterloo Medical Society held at Kitchener on March 13th, Dr. E. E. Cleaver spoke on "The rôle of constipation in chronic gastrointestinal disease and its treatment."

The Sault Ste. Marie Medical Society met on Thursday, March 13th. Dr. H. H. Bullard of the medical faculty of Western University gave an address on "The pathology of the common causes of death as seen at autopsy."

The Porcupine District Medical Society met at Timmins on March 14th. Dr. H. A. Dixon of Toronto gave an illustrated address on "The diagnosis and treatment of the common skin affections."

At a meeting of the Sault Ste. Marie Medical Society on April 10th, Dr. Warner Jones spoke on "Enlarged prostate."

On March 25th, Dr. J. G. Fitzgerald addressed the Oxford County Medical Society at Woodstock, on "The

place of antitoxins, serums and vaccines in the control of communicable diseases."

The North Waterloo Medical Society met at Kitchener on April 3rd. Dr. F. B. Mowbray of Hamilton gave an address on "The technique and application of local anaesthesia."

At a meeting of the Essex County Medical Society at Windsor on April 7th, Dr. F. F. Tisdall spoke on "Some fundamental principles of infant feeding and their practical application in every day practice."

The Niagara District Medical Association met at Niagara Falls on April 15th, Dr. Roscoe Graham gave an address on "The surgical aspect of the chronic dyspeptic."

At a meeting of the Lincoln County Medical Society held at the Welland House, St. Catharines on April 8th, Dr. J. C. Calhoun of Toronto gave a talk on "The value of an ear, nose and throat examination as an aid in diagnosis and treatment."

Dr. Geo. Strathy addressed the Hamilton Medical Society on April 3rd, on "The differential diagnosis of

pain in the back." On April 17th, Dr. Geo. E. Smith addressed the same society on "Protein sensitization in infancy and childhood and its relation to the treatment and management of eczema and asthma."

Dr. W. B. Hendry of Toronto addressed the Hamilton Medical Society on March 18th, his subject being, "Early uterine abortion, tubal pregnancy, acute

gonorrhreal salpingitis;" and on March 25th, Dr. W. R. Campbell addressed the same society on "The principles of dietetics in health and disease."

The Brant County Medical Society met at the General Hospital, Brantford, on April 9th, Dr. W. E. Ogden of Toronto gave an illustrated talk on "different types of chest conditions."

N. B. GWYN

MANITOBA

The recent death of Dr. James Patterson at Perth, Ont., removed one of the old landmarks in the medical history of Manitoba. He came to Winnipeg from Almonte in 1882, and in the following year became one of the thirteen incorporators of the Manitoba Medical College now the Faculty of Medicine of the University of Manitoba. He was the first registrar of the College and Professor of Hygiene. After thirty-one years of practice in Winnipeg he removed to Perth.

The profession in Manitoba are looking forward with expectation to a visit from Mr. Basil Hall, the President of the British Medical Association. The visit last year of two representatives of that Association, Sir Jenner Verrall senior representative on the Council, and Dr. Alfred Cox the Secretary, left such pleasant memories that we are eager to welcome the President.

The large lecture theatre in the science group of buildings of the university was filled to capacity on

the evening of April 3rd., the occasion being the second Gordon Bell Memorial Lecture under the auspices of the Winnipeg Medical Society. The lecturer was Prof. M. P. Ravenel, Professor of Preventive Medicine, University of Missouri, and a personal friend of the late Dr. Bell. Knowing the interest that Gordon Bell took in all that pertained to public health Prof. Ravenel chose as his subject "The Prolongation of Life: To What Goal is it Leading?" After showing how the expectation of life had greatly increased he dealt with the topics of increase of the world's population, the world's food supply, decline in birth rate among the higher classes, the selective action of alcohol on germ plasm, and birth control. He ended with the words of the Psalmist: "So teach us to number our days, that we may apply our hearts unto wisdom."

Manitoba expects to send a large representation to the annual meeting of the Canadian Medical Association in June.

ROSS MITCHELL

SASKATCHEWAN

Dr. J. D. Fieldman, of Yorkton, is visiting for a few weeks at the Mayo Clinic, and other eastern hospitals.

Dr. E. J. Finnerty, formerly of Hanley, now resides at Oakland, Cal.

Dr. H. R. Ross, formerly of Assiniboina, has removed to Vancouver.

Dr. E. T. Jessop, Tugaske, is spending the winter in Europe visiting various hospitals.

Dr. W. A. Reddick, a former resident of Saskatchewan has returned to the province and is now located at Khedive, having purchased the practice of Dr. A. McDonald.

[ED. NOTE.—Officers of the district medical societies recently elected will be published in the list of officers of medical societies to appear in June issue.]

Dr. Frank B. Walsh, Estevan, recently left on an extended visit to England. Dr. Walsh expects to be away for six or seven months.

Dr. G. J. Wherrett, until recently on the medical staff of the Fort Q'Appelle Sanitorium, has accepted a position in New Brunswick where he will be engaged in tuberculosis consultation work in connection with the Public Health Department.

Dr. H. E. Eaglesham, a former resident of Weyburn and at one time member of the Council of the College of Physicians and Surgeons and also a member of the Medical Council of Canada, left the province

a few years ago, owing to ill health, gave up active practice and moved to Victoria, B.C. Having regained his health he returned at first to Calgary but later on settled in his old home at Weyburn, where he is now in active practice.

Dr. H. E. Alexander and family, of Saskatoon, and Dr. D. W. Allen and family, of Weyburn, recently sailed together for England. Both doctors will be absent for about a year, and will undertake post graduate work.

Medical men in Saskatchewan hope to see a very large representation from eastern Canada at the meeting at Regina, June 22nd-26th, of the Canadian Medical Association. No effort is being spared by them to make this one of the best, if not the best, meeting yet held. The Saskatchewan Association holds strongly the view that the time is long overdue when the people of Canada should know each other better, and understand each other's problems aright. Generally speaking, the people of the west travel more to the east than those of the east come west. This is probably very natural owing to the fact that to many of us, a trip east means a visit to the old home. We feel that this is one opportunity for the eastern medical men to visit their western confrères. All members of the profession in the west will be delighted to see their eastern confrères. Who better than medical men, trained to perceive carefully, and men of broad sympathy, can assist in spreading the gospel of brotherhood between east and west; the only gospel which will give the true meaning of the word Canadian. Therefore let the east meet the west at Regina in June.

A. MACG. YOUNG

ALBERTA

Dr. Neil Christie, of Calgary, who has been ill for some weeks is now much improved in health.

Dr. J. N. Gunn, D.S.O., of Calgary, has returned from a pleasant trip to the West Indies.

Dr. A. B. Wickware, formerly of Edmonton, is now practising at Elnora.

Dr. S. J. Staples, of Woodville, Ontario, has moved to Bow Island, where he will practise.

Dr. G. A. Minorgan, who held the mine contract at Basing, Alberta, is now established at West Vancouver, B.C.

Dr. Robert Allan, formerly of Castor, and latterly of Estevan, Saskatchewan, has returned to Alberta and at practising at Coronation.

Alderman Dr. T. H. Crawford, of Calgary, has recently been appointed Acting Major.

Dr. J. D. Milne, of Calgary, left for Hamilton, Ontario, owing to the death of both of his parents. Sympathy is extended to him in his bereavement.

Dr. E. A. Blais, of Edmonton, has been at the Mayo Clinic for some time past.

Dr. V. E. Barrow, of Edmonton, Provincial Health Officer, has resigned and is now practising in Edmonton.

Dr. W. N. Condell, who has spent the winter at the Pacific Coast, has returned to Edmonton.

Dr. T. H. Whitelaw, M.O.H., Edmonton, and family, have been spending the winter in Honolulu.

Dr. Alexander Forin, Chief Medical Adviser of the

Workmen's Compensation Board, has recovered from a severe illness and is now on duty again.

Dr. Robert Elder, formerly of Granby, Quebec, is now practising at McLeod.

Dr. J. S. Brookman, of Coronation, died March 6th, after a brief illness.

At a recent meeting of the Council of the College of Physicians and Surgeons of Alberta, Dr. H. W. McGill, Calgary, was elected President, and Dr. W. G. Anderson, Wardlow, Vice-President.

The Annual Meeting of the Calgary Medical Society was held Tuesday, April 7th, and the following officers were elected for 1925-1926:—President, Dr. E. R. Selby, D.S.O.; Vice-President, Dr. R. B. O'Callaghan; Secretary, Dr. A. I. McCalla; Treasurer, Dr. J. A. Allen; Credential Committee, Drs. F. T. Campbell, A. B. Singleton and J. W. Murray. The retiring President, Dr. J. V. Follett, spoke of the accomplishments of the Society during the past year and emphasized the need of strong co-operation in the work which the members have undertaken in connection with the Gyro Club Clinic and the School Board Agreement in relation to the treatment of school children.

As an amendment to the Workmen's Compensation Act, the following is proposed as under Section 34 Clause (1 A):—"Notwithstanding any of the provisions of this Act when a workman is frost-bitten in the course of his employment, such occurrence shall be deemed to be an accident arising out of and in the course of his employment within the meaning of this Act."

2 (1 B) "The preceding subsection shall be deemed to have been in effect from the last day of September, Nineteen Hundred and Twenty-Four."

A course in medical ethics is now given at the University of Alberta by Dr. F. H. Mewburn, Professor G. E. LEARMONT

BRITISH COLUMBIA**B. C. MEDICAL ASSOCIATION**

There is considerable agitation in Vancouver at the present time over the subject of vaccination and smallpox. For the last year or two there has been a considerable incidence of smallpox in Vancouver, and its vicinity, and this has been increasing since January, 1925. While there have been no deaths and the epidemic has been of a distinctly mild character, (this is probably the reason of its rapid spread, as numerous slight cases have passed unnoticed), yet the fact that over 300 cases have been reported in Vancouver City alone, since the beginning of the year, shows that there is a definite epidemic.

The United States placed an embargo on all travellers leaving Vancouver for the U.S.A. some two or three weeks ago, insisting on vaccination before such travellers could proceed to their destination. This precipitated a crisis, as such an order naturally caused considerable dislocation of business.

The Provincial Health Department, acting in conjunction with the Municipal Health officer, Dr. Underhill, took prompt and efficient measures to institute general vaccination. This, of course, has caused much annoyance and distress in the ranks of the anti-vaccinationists, who, in their efforts to discredit vac-

cination and persuade citizens to evade the law, have resorted to every measure of abuse, exaggeration and actual misstatement that could be conceived of. They have gone so far as to accuse the entire medical profession of having manufactured a smallpox scare where no epidemic existed, simply to make a profitable business for themselves out of vaccination. The health officer and the head of his health department, Dr. Worthington, have been accused of almost every crime in the calendar.

This campaign of vilification and abuse has, we think, rather overshot its mark, and moderate citizens of all kinds are getting rather tired of it. Vaccination is being done on a large scale, and sore arms are frequent wherever two or three are gathered together. The bugaboo of bovine syphilis, invented by the late Dr. Abrams has been a very useful monster to these gentry; it is to be regretted that such outrageous misstatements are allowed to pass unchallenged by the authorities, as perfectly sincere and well-meaning people are genuinely alarmed by the mention of the word syphilis, and naturally hesitate to expose their children to its dangers.

J. EWART CAMPBELL

The annual meeting of District No. 6 of the British Columbia Medical Association was held in Nanaimo,

on March 27th. Interesting addresses were given by Dr. Vrooman and Dr. Mason, of Vancouver. In addition to the local doctors present, were Mr. Morgan, of Alberni; Dr. Hicks, of Cumberland; Dr. Rogers, of Chemainus; Drs. Maxwell and Henry, of Ladysmith, and Dr. Bissett, of Cassidy, and Dr. Patterson, of Victoria. The officers for the ensuing year were elected as follows:—

Dr. Rogers, Chemainus, President; Dr. G. A. B. Hall, Vice-President; Dr. McIntyre, Secretary-Treasurer; Drs. Hicks, Maxwell, Morgan and Bissett were appointed on the Executive.

Dr. McPhee was appointed as representative to the B.C. Medical Association.

The regular monthly meeting of the Vancouver Medical Association was held on the 3rd of March at which Dr. R. B. Boucher gave a most interesting paper on "Inflammatory Conditions of the Ear." Part of this paper appears in the April number of the Vancouver

Medical Association Bulletin, and the remainder will be published in subsequent numbers.

Sir Henry Gray, of the Royal Victoria Hospital, Montreal; Dr. Hugh Cabot, of the University of Michigan and Dr. Alan Brown, of Toronto, are among the speakers scheduled for this year's clinics of the Vancouver Medical Association to be held in Vancouver July 2nd and 4th. The full programme, with the names of other speakers will be published in the May number of the monthly *Bulletin*.

Word has just been received of the appointment of Dr. Hibbert Winslow Hill, of London, Ontario, to the vacant Chair of Public Health and Bacteriology in the University of British Columbia, left vacant through the lamented death of the late Dr. R. H. Mullin. Associated with this appointment is the position of Director of Laboratories of the Vancouver General Hospital.

J. EWART CAMPBELL

UNITED STATES

We have received a reprint from *The Military Surgeon* of papers by American contributors to the second International Congress of Military Medicine and Pharmacy, Rome, May-June, 1923. Two valuable papers deal with the influence of the war on surgical tuberculosis and on tuberculosis as a war problem. Other articles discuss the utility of serums and vaccines in war, the military mental defective and the experience of the American Navy in the prevention and control of venereal disease during and since the war.

Examinations of the American Board of Otolaryngology will be held during the meeting of the American Medical Association in Atlantic City, May 25th to 28th. According to the rules of the Board, applicants are divided into three classes. Class I. Those who have practised otolaryngology ten years or more. Class II. Those who have practised otolaryngology five years and less than ten years. Class III. Those who have practised otolaryngology less than five years. The type of examination is different for each class. The Secretary, Dr. H. W. Loeb, announces that thus far over three hundred applications have been made. A later communication states that the examinations will be held in the Ambassador Hotel on Tuesday, May 26th at 9 a.m. Application blanks may be obtained from the Secretary 1402 South Grand Boulevard, St. Louis, Mo.

The annual meeting of the American Society for the Control of Cancer was held on March 7th, at which the office of President was filled by the unanimous election of Dr. Howard Canning Taylor. Since the death of Dr. Powers in 1922, Dr. Taylor has served as acting president and chairman of the Executive Committee, and has very ably filled both offices. He is one of the founders of the Society, and has been active in connection with it from the very beginning. Dr. Francis Carter Wood was elected as Vice-President. The chairman of the Advisory Council, Dr. Reynolds, was re-elected, and Drs. Clement Cleveland, James Ewing, W. W. Chipman, and Rudolph Matas were elected as vice-chairmen. The following were added to the Advisory Council: Drs. John Bentley Squier, James V. Murphy, Burton T. Simpson, W. E. Deeks, Raymond P. Sullivan, Walter F. Wilcox, G. N. Calkins, and E. B. Wilson. Among the subjects discussed was the necessity of more medical education in regard to the early symptoms of cancer. There was also a unanimous agreement that the methods now employed for teaching students what physicians should know about cancer were inadequate and should be improved. The prevention of cancer was a subject which demanded all possible attention in the future, and importance should be given to the removal or avoidance of conditions which frequently lead to its development.

Intracardiac Injections of Adrenaline in Heart Failure.—(*Il Polyclinico*, January 5th, 1925, p. 9) reports a case of heart failure during spinal anaesthesia cured by intracardiac injection of adrenaline. The patient, sixty-eight years old, suffered from strangulated hernia. Spinal anaesthesia was induced with 8 eg. novocain and 1 c.cm. adrenaline (1 in 1,000). Heart failure occurred at the beginning of the operation and was not relieved by caffeine and ether injections, nor by inhalation of oxygen and artificial respiration. As the patient be-

came worse 10 c.cm. of 1 in 1,000 adrenaline was injected into the left ventricle of the fourth intercostal space. As the needle was observed to oscillate almost immediately, it was removed and artificial respiration resumed. Twenty minutes after the adrenaline injection the patient was so much better that it was possible to complete the operation, and the subsequent post-operation course was normal. Before injection of adrenaline the pulse and cardiac beats were imperceptible.—*Brit. Med. Jour.*, Feb. 28, 1925.

Book Reviews

The Practical Medicine Series, vol. iv.—Pædiatrics.
Edited by Isaac A. Abt, M.D., with a collaboration of Johanna Heumann, M.D. 381 pages, illustrated. Price \$2.00. Year Book Publishers, 304 N. Dearborn St., Chicago. Series 1924.

This is a valuable pediatric annual. It would seem to be of particular value to one confining his practice to diseases of children as a reference book. The Editor's notes are timely and to the point, but the book would have a greater range of usefulness if these notes gave the Editor's viewpoint more in detail. The book does not aim to cover entirely the work done in pediatrics in 1924; and the reviewer agrees with the editor in his preface, when he hopes that future editions will be more complete. D. B. LEITCH

Diseases of the Rectum and Pelvic Colon.—By Martin L. Bodkin, M.D., F.A.C.S. Second edition revised and enlarged. 487 pages, illustrated. Price \$6.00 net. E. B. Treat & Co., 45 E. 17th St., New York, 1925.

This second edition is a pleasing and welcome addition to the literature on this subject. With the new chapters on "The Irrigation of the Colon"; "Superficial Diseases of the Anal Region"; and the "Relation of the Intestinal Flora to the Simple Catarrhal Diseases of the Colon," so many points of importance are dealt with, that it is made doubly valuable to the general practitioner, as well as the pædiatritian.

We are pleased to note the author makes mention of the use of autogenous vaccine among the many curative methods for pruritus ani as we are convinced some cases are obstinate to all other forms of treatment.

The clear descriptive text is well illustrated by many fine cuts and while the essentials of the latest and best methods is not lacking, tiresome detail is eliminated. Well-balanced as to surgical and medical treatment, we bespeak for it a hearty welcome by physicians and surgeons alike. F. J. BALL

The Clinical Examination of Surgical Cases, for the Use of Students. By J. Renfrew White, M.S., F.R.C.S. (Eng.) 134 pages. Price \$3.00. The Macmillan Co. of Canada, Ltd., Toronto. 1924.

One has but to open this little volume to see at a glance that it is written by a teacher of surgery. The author states that it is for the student, and it is just the kind of a book he needs. It is written in a clear, concise and didactic manner, emphasizing the necessity of a routine, systematic and careful clinical examination in all surgical conditions. Moreover, when studled with a good system of surgery, it will be found of inestimable value to the advanced student. GEO. E. SELDON

Heredity in Nervous and Mental Disease. An investigation by the Association for Research in Nervous and Mental Disease. 332 pages, 48 illustrations. Price \$3.75 net. Paul B. Hoeber, Inc., 67 E. 59th St., New York, 1925.

Those already acquainted with the two monographs previously published by the Association for research in nervous and mental disease, will welcome this third volume. Its predecessors deal with the timely topics of "Acute Epidemic Encephalitis" and "Multiple Sclerosis" and are very excellent résumés.

It is the custom of the Association to select one subject for investigation each year, various aspects of

the subject being assigned to individual workers a year previous to the meeting at which the complete discussion is to take place. The method of presentation is unique in that each essayist on presentation of his thesis, is subjected to something resembling a cross examination by members of a "Commission" appointed from the membership of the association. The questions put and replies made are recorded verbatim in the published volumes and not only contribute a great deal toward the elucidation of the subject under discussion, but also add a decided flavour of human interest.

Quite appropriately, the frontispiece is a very good portrait of Gregor Johann Mendel. A list of contributors and the personnel of the Commission follows and is at once a guarantee of the thoroughness and trustworthiness of what is to follow. In the preface the editorial committee wisely and modestly state that the volume is published "Not in any sense as a complete investigation of this most interesting group of laws, but in order to introduce a little maturity of vision and clarity of thought into the consideration of these questions by physicians and especially those physicians who are so often asked to pass judgment on these questions—the neurologists and psychiatrists."

In this object one must say that they have eminently succeeded since, while a few of the papers represent really original research in the commonly accepted sense, they all represent most careful and thoughtful reviews of literature and personal experience on the several aspects of the subject and together form a most valuable and trustworthy setting forth of up-to-date knowledge of the part played by heredity in the etiology of nervous and mental disease. The very excellence of the compilation makes the absence of an index more keenly felt. The two previous volumes lacked indices and from personal experience one knows how exasperating it is to have to go through a chapter or two searching for the information wanted and contained in one or two sentences. The placing of a carefully selected bibliography at the end of each section is an excellent idea.

The first chapter leads off with Dr. Timme's Presidential address in which he pays graceful tribute to the "Fathers of American Neurology," mentions some interesting correlations between epilepsy, migraine, excessive growth and blood sugar values that contain considerable promise, and throughout dwells upon the need for accuracy in observation and moderation in drawing conclusions. The remainder of the chapter is taken up with a consideration of the general facts of heredity. Then follow in logical order, discussions on the parts of the nervous system which tend to exhibit morbid recessive or dominant characters, pathological aspects of heredity in nervous disease containing an interesting presentation on experimental degeneracy by Professor C. R. Stockard, heredity in psychosis and lastly heredity in literature, a sprightly essay in which Dr. Joseph Collins reviews briefly a number of books of fiction in which attempts to present the facts of heredity have been made.

The Association is to be congratulated on and thanked for this excellent piece of service to the profession. The publisher has much credit due him for the physical excellence of the book; the binding is sturdy; the paper and letterpress good, and the illustrations, some forty-eight in number, uniformly clear.

The forthcoming volumes on "Epilepsy" and the "Cerebro-Spinal fluid" will be awaited with pleasurable anticipation.

A. T. MATHERS

A Text-Book of Practical Therapeutics with especial reference to the application of remedial measures to disease and their employment upon a rational basis. By Hobart Amory Hare, B.Sc., M.D., LL.D. Nineteenth edition. 1061 pages, 144 engravings and 8 plates. Price \$7.00. Lea & Febiger, S. Washington Sq., Philadelphia, 1925.

This, the nineteenth edition of Hare's practical Therapeutics, gives promise of retaining its place of prominence among the standard works on its subject. Comparing this with former editions one notes much careful revision and in some cases rewriting of whole sections, with due reference to recent advances in clinical medicine and therapeutics. In Part I, "General Therapeutical Considerations," is found a timely reference to the importance of standardization of drugs. As the author puts it: "A poor drug to the physician is worse than a poor knife to the surgeon; for the failure in the one case is unknown, while in the other it can be carefully watched and guarded." The large section on "Drugs," Part II, while undoubtedly authoritative and up-to-date, would appear to be capable of condensation without impairment of its value in a work of this kind. In Part III, "Remedial Measures other than Drugs," the sane and conservative treatment of such subjects as serum and vaccine therapy is noteworthy. Commenting on the latter, "the writer believes that the field of efficiency of so-called vaccines in treatment, in distinction from prophylaxis, is constantly narrowing, and that before long this plan of treatment may be perhaps considered obsolete except in very localized infections." Similar restraint is seen in the account of Gland Therapy, which is found in Part II under "Drugs." Part IV, "Diseases," is a concise statement of the application of the facts and principles discussed in Parts I to III to the actual treatment of disease. The arrangement throughout the book is alphabetical, this making for easy reference. This new edition may be confidently recommended to the continued favour of students and practitioners.

J. R. CORSTON

Genito-Urinary Diseases and Syphilis including their surgery and treatment. By Charles S. Hirsch, M.D. Fourth edition, revised. 337 pages, 44 illustrations. Price \$2.00 net. P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, 1925.

This little volume of 335 pages on the above subject is a good example of what a compend should be, all the facts necessary for a student preparing for examination and for a general practitioner who is called upon only occasionally to treat venereal disease.

On page 101 he says "Then by means of a uretherometer and bulbous bougie the nature, position and calibre of the stricture are to be established." This, the above quotation illustrates the difficulties of the writer and the reader in a compend. The writer has no room to explain how, when or where, and the reader must either know or secure another book to take him on his road.

For the price of \$2.00 the author and publishers have produced a very handy and useful little volume.

E. L. CONNOR

Fractures and Dislocations. By Philip D. Wilson, A.B., M.D., F.A.C.S., and William A. Cochrane, M.B., Ch.B., F.R.C.S. Edin. 800 pages, 978 illustrations. Price \$11.00. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1925.

This text-book of nearly 800 pages and over 900 illustrations embodies all the newer methods employed in the treatment of fractures and dislocations. For the hospital surgeon or the practitioner with access to an up-to-date hospital it offers a very excellent refer-

ence book, as it illustrates all the newest splints, bed adjustments, extension apparatus and operative treatment. To such a practitioner there is given the minutest detail, illustrated so completely that there should be no difficulty in putting up the most complicated fracture. To the practitioner in the small town, or in a country district, the work may be rather overpowering, and the methods employed rather difficult to follow. Several of the chapters, as chapter 2, embody elements of treatment that we have seldom found so well described in previous works on the subject. Emphasis is laid on the necessity for the prompt application of splints at places where fracture has occurred before the patient is transported. Unlike most textbooks, treatment immediately subsequent to the reduction of the fracture is given an undue amount of stress. The second part of the work considers treatment of special fractures and is illustrated with appropriate anatomical pictures and descriptions; the illustrations show unusually well how and why deformity occurs. The technical part of the work, the illustrations, particularly those of the x-rays, are unusually good; and all the photographs are original. It is noted that there is no special reference made to fractures of the skull, though fractures of the jaw and face are described.

CHAS. K. P. HENRY

Operative Surgery. By J. Skelton Horsley, M.D., F.A.C.S. Second edition. 780 pages, 666 illustrations. Price \$12.00. The C. V. Mosby Co., 508 N. Grand Boulevard, St. Louis, 1924.

The first edition of this work appeared in 1921 and the issue of a second edition within three years is in itself suggestive of commendation.

A chapter on the principles of operations for malignant disease, and the treatment of x-ray and radium burns has been added, and various new operations are described and the technique discussed. Although not claiming to be an encyclopaedia of operations, the work covers the field of general surgery satisfactorily, and is based on the author's experience in the majority of the operations described. The author states, that, "one of the chief aims of the book is to emphasize those physiologic and biologic principles which to some extent obtain in every surgical operation." This is fundamentally sound, and throughout the work there is evidence of consistency. This recognition of basic principles in the planning and performing of operations, and in the after care and treatment to obtain or maintain function is the important asset of such a work, and it is found in this one blended with clear and concise description of operations. This work will be of much value to the younger surgeons, conscious of the need of experience and direction, but the seasoned surgeon will find in it items of interest and benefit. The illustrations are in the main, good. The printing is excellent and the book easy to read.

J. G. MACDOUGALL

Medicine: An Historical Outline. By M. G. Seelig, M.D. 207 pages, 49 illustrations. Price \$2.25. The Williams & Wilkins Company, Baltimore, 1925.

In a very attractive little book, Dr. Seelig gives to the world eight lectures which were prepared for the senior students of the Washington University School of Medicine. It is venturesome, surely, to attempt the relation of the story of our art in so short a course of lectures, but our author has met with a measure of success which commands admiration. Material selected with much discrimination is presented lucidly, entertainingly and with complete freedom from pedantry. Quick, bold strokes, which do not lack in artistry, portray the characters introduced, and the influences which moulded them, so skilfully that the reader almost fancies himself a spectator of a swiftly moving drama.

Comment upon the factors which determined various schools of medical thought, while necessarily brief is enlightening, and the great discoveries are described with refreshing terseness and vigor. In so small a volume one must expect the omission of many interesting events, and in the last chapters names crowd in so rapidly as to preclude anything but a brief note relative to each. Nevertheless, as a rapid survey of medical history, the book is eminently satisfactory and will appeal not only to undergraduates but to busy practitioners who desire to learn of the profession's past with a moderate outlay of time. All such will find Dr. Seelig's book not only instructive but so charmingly written that the hands cling to it until it has been read from cover to cover. An interesting foreword by Colonel Garrison adds value to the book. The publishers have done their part admirably except that numerous typographical errors have escaped the proof-readers.

W. H. H.

The Diagnosis of Children's Diseases with special attention to the diseases of infancy. By Professor E. Feer. Translated by Carl Ahrendt Scherer, M.D., F.A.C.P. 550 pages, illustrated. Price \$8.00. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1925.

This book is a departure from the usual textbooks on pediatrics. There is constant adherence to the subject throughout, and, in view of the fact that diseases are not described individually in the order that is orthodox,—definition, history, etiology, pathology, symptoms, course, and prognosis. Diagnosis and treatment suggests what a large amount of information relative to diagnosis is incorporated in this volume.

There are 267 photographic illustrations, well chosen and interesting, which break the tedium of reading and well serve their purpose otherwise.

The subject matter is taken up in chapters according to systems, outstanding symptoms or signs, or diseases. The author introduces the book by a description of a suitable case history and the technique necessary for the examination of an infant or child. This would seem to be irrelevant but being particularly meant for students and practitioners who desire to improve their knowledge of the diagnosis of diseases of children it is suitable to include it in this book. Chapters on facial expression and physiognomy, nutrition and development, disturbances of weight and growth, and a description of abnormalities of the various parts of the body follows. These chapters are quite complete and abundantly illustrated. Certain parts of this book are undoubtedly better than others and this last one is of special merit. Other portions equally as well and logically written are not so admirable, as for example the chapter on nutritional disturbances, where a classification combining that of Czerry and Finkelstein is adopted. The sections on diseases of the heart and kidneys are short while those dealing with the respiratory and nervous system are more detailed.

Special aids in laboratory diagnosis are taken up in chapters by themselves.

Throughout the book the author expresses his own opinion on subjects that are not undisputed and gives many helpful tips.

In conclusion, this book is a good addition to a physician's library inasmuch as it is so full of useful information and differs so widely from the standard texts on pediatrics.

O. J. DAY

Proceedings of the International Conference on Health Problems in Tropical America. Published by the United Fruit Company, Boston, Mass., 1924.

This volume contains papers by some of the most eminent living authorities on tropical disease, and will form a useful book of reference on the subject. The

Conference, which was held in Kingston, Jamaica, in the summer of 1924 (a choice of place and time which bespeaks a courageous disregard of tropical conditions!) was the outcome of an original plan to bring together the nine medical superintendents of the hospitals established by the United Fruit Company in Central America. Dr. Deeks, the general manager of the medical department of the Company, decided with praiseworthy insight and energy to go further afield and gather also other scientists interested in similar problems. A glance at the list of men who eventually contributed to the Conference is proof of its inclusiveness, for it contains many names of international repute. Dr. George Vincent of the Rockefeller Institute opened the Conference with an interesting paper on tropical hygiene, an international adventure to which we hope to refer in a later issue.

Whilst in no sense a text-book, this volume contains much valuable information especially for all those who have to deal with tropical disease, and is evidence of the excellent work being done in the regions of Central America and the West Indies with regard to the investigation of this disease and its control. This work is to a large extent encouraged and supported by the United Fruit Company.

An index would have added greatly to the usefulness of the book.

H. E. MACDERMOT

The Surgical Clinics of North America. Vol. iv, No. 5 (Portland-Seattle Number, October, 1924). 263 pages with 112 illustrations. Per clinic year (February, 1924 to December, 1924). Paper \$12.00; Cloth \$16.00 net. Philadelphia and London, W. B. Saunders Co. The J. F. Hartz Co. Ltd., Toronto and Montreal.

This volume contains papers from a wide range of clinics in Portland and Seattle. The subjects are, as a rule, well presented and the illustrations are descriptive and well chosen. Owing to the large amount of material contained in such a space, brevity is sometimes obtained by the omission of data which would probably increase the value of the work to those members of the profession who are not so well aware of its value as the authors themselves. To illustrate, an article on acute appendicitis makes no mention of the significance of the pulse rate, though the subject is otherwise unusually well covered. Certain articles in this volume deserve special mention. Of these we would mention the paper on "Persistent Thyroglossal Duct," "Atypical Toxic Goitre," "Physics of some of the Deformities of Rickets," and "Hypertrophic Pyloric Stenosis." On the whole the previous standards of the work have been well maintained.

L. H. MCKIM

A Text-Book of Physiology for Medical Students and Physicians. By William H. Howell, Ph.D., M.D. Ninth edition, thoroughly revised. Octavo of 1069 pages, 308 illustrations. Price cloth \$6.50. Philadelphia and London, W. B. Saunders Co. Canadian Agents: The J. F. Hartz Co., Toronto, 1924.

Everyone who is familiar with the subject of physiology knows Howell's Text-book. The volume just published is the ninth edition, the first appearing in 1905. It differs very little from the other text-books on the subject except that the author has very properly taken advantage of the opportunity to express his own views on certain matters, particularly in regard to coagulation of the blood. Views from which others may be allowed to differ. The perfect text-book on physiology has not yet been written and probably in the nature of things never will be. This book occupies a place as one of a number to which the student of the subject will turn for instruction and guidance.

A. W. DOWNS

General Systematic Bacteriology. By R. E. Buchanan, Ph.D. Volume I. 597 pages. Price \$6.00. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore, 1925.

A satisfactory classification of bacteria, based on searching examination of scientific data, which would be generally accepted, has been desired by workers in bacteriology. Much confusion has arisen from too numerous synonyms which could be obviated by the adoption of uniform nomenclature.

In this volume the author has included the chronologically arranged classification which has led up to that systematic arrangement compiled by the committee of the Society of American Bacteriologists of which Bergey was chairman. Part of the work was adopted by the Committee from the classification proposed by Professor Buchanan and published by him in certain journals. All this data is also included in the Manual of Determinative Bacteriology by Bergey et al.

The second part of the volume deals with the rules of nomenclature followed by a section on the nomenclatural status of names which have been applied to groups of bacteria of higher rank than species. In alphabetical order is given a list of names proposed for the divisions from subgenera to classes "including casual or vernacular terms which have had more or less extensive recognition and have been confused with scientific names. In general an attempt has been made to give the original diagnosis of the term, to discuss its usage by bacteriologists, and to point out whether its use apparently contravenes good usage or the rules of the code." Much information of value from a reference standpoint has been compiled with meticulous care in this section.

A tabulated summary of the new generic and specific names with the old synonyms placed in parallel order would facilitate reference and further enhance the value of the book.

M. M.

Serum Diagnosis of Syphilis by Precipitation. By K. L. Kahn, M.S., D.Sc. 237 pages, 5 illustrations. Cloth, Price \$3.00 net. Williams & Wilkins Co., Baltimore, 1925.

The many technical difficulties and the liability to error, inherent in the performance of an indirect serological test for syphilis, such as the Wassermann, where the inter-reaction between the "reagin" in the serum and the antigen is judged by the disappearance of complement, and in turn, by the hemolysis of red cells, coupled with the fact that, even after extensive research, little is known of the relation of heart muscle antigen to syphilis and of the physiochemistry laws that govern this relation, have led several investigators to seek for a test performed in a simpler manner, with consequent less possibility of error, and whose technic may offer a medium for the solution of some of the basic laws governing serological reactions, but until recently with little success. Kahn from his studies on one of the earlier precipitation reactions has evolved a test that seems to approach more nearly to an ideal one from the standpoint of simplicity and reliability, and which he describes in the series of studies, recorded in this book.

The author's comparative studies of the test indicate that it is equal in sensitiveness to a Wassermann test which employs a cholesterolized antigen and an eighteen-hour fixation. In primary syphilis, tertiary syphilis of the mucocutaneous and osseous systems and in tabes dorsalis, the Kahn test is more sensitive. Further, fewer false positives occur with the precipitation test than with the Wassermann.

The book is essentially for laboratory workers but will prove also of interest to the clinician. Certain minor technical procedures, such as the use of the Miller-Little mirror in reading the results, are omitted, possibly because they have not found uni-

versal acceptance. The book is well written and well-indexed and the bibliography seems inclusive.

G. H. PEARSON

The Crippled Hand and Arm. By Carl Beck, M.D. 243 pages, 302 illustrations. Price \$7.50. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1925.

This monograph is divided into two parts—the first considers conditions in the hand, the second in the wrist, forearm, elbow and arm in relation to their effect in producing crippling of function. In the introduction reference is made to the part the hand takes in the evolution of man, and its function in the higher arts such as we have them at the present time. The chapter on the anatomy, while elementary, yet apparently gives all that is necessary for one to know in the operations which are described later. What is surprising is the statement that the axillary nerve supplies the muscles of the shoulder, leaving the impression that this nerve supplies them all, while in reality it only supplies the deltoid and teres minor; also the statement that the musculo-cutaneous supplies the muscles of the forearm; and that the cutaneous to the arm and forearm arise from the radial. Such assertions make one doubtful of what may follow.

On the other hand the reconstruction of the hand crippled from birth is highly instructive and very intelligently written. The operative technique is in some cases original. The repair of the mutilated hand is very complicated and demands a great deal of foresight and patience on the part of the surgeon. Evidently the writer has these qualities, as the results shown are exceedingly good and most convincing. Reconstruction following extensive burns is dealt with in a most thorough manner, and the results must have been gratifying to patient and surgeon alike. The hand crippled by disease is also exhaustively considered with equally good results.

The second part is devoted to the arm and defects or injuries in it which may interfere with function, and thus cripple the hand. Here again one sees marked ingenuity in handling very serious problems. Painstaking work has certainly achieved excellent results.

The book is interesting and contains an abundance of good material and the results shown are excellent. It can be recommended to all who have to deal frequently with injuries to the hand.

R. B. MALCOLM

A Text-Book of Chemistry and Chemical Urinalysis for Nurses. By Harold L. Amoss, M.D. Third edition thoroughly revised. 248 pages. Price \$2.25. Lea & Febiger, S. Washington Sq., Philadelphia, 1925.

It is by no means certain that definite courses in chemistry and others of the pure sciences are desirable in a nurse's curriculum. Obviously if they are given, less time will be available for nursing training. It is doubtful if the scientific knowledge acquired will make up for this loss of time in essentials. The nurse requires a slight knowledge of chemical terminology, and can usefully know how to test for sugar and albumin in urine. These requirements do not justify a systematic course in chemistry.

If, however, the nurse's curriculum includes such a systematic course, illustrated by experiments (elementary chemistry without experiments is spineless) then Dr. Amoss' little book is well suited as a textbook for this course. It is well printed, reads easily, gradually leads from general and inorganic to organic chemistry and a little biochemistry, and it stresses wherever possible the chemical substances which the nurse may actually handle, and what their uses are. Since, however, even in the shortest course, absolute accuracy is desirable, a number of errors are recorded; a few improvements are suggested.

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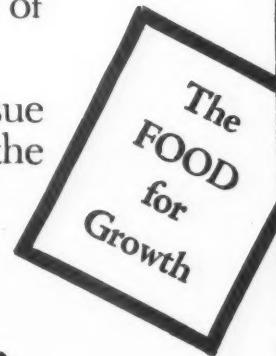
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misspelled without the final *e*. The molecular physics in Chapter IV is very loosely written, if not actually inaccurate, in view of recent advances in our knowledge. Molecules and atoms certainly should not be termed "imaginary," and we have a fairly accurate knowledge of their sizes, even if these are beyond our imagination. The whole conception of pH nomenclature depends on the existence of some hydrogen ions in alkaline solutions; the treatment given to pH is misleading. The modern commercial processes of obtaining hydrogen and oxygen are not those described in the book. Sodium tartrate is not Rochelle salt, as stated. Carbohydrate digestion *does* take place to a considerable extent in the stomach, since salivary amylase continues to act there until the medium is distinctly acid throughout. Slight digestion of (emulsified) fats *does* occur in the stomach. After the chemistry of glucose has been dealt with the unfortunate word "dextrose" is suddenly employed, without any explanation that this refers to the same compound; "glucose" is thereafter discarded. Blood glucose limit for normal alimentary glycosuria is about 0.18 per cent, and not 0.3 per cent, as stated. It seems undesirable to perpetuate in new editions the old formula for urea, without at least indicating that its accuracy is open to grave suspicion.

Much of the organic chemistry given might well be compressed or excluded. On the other hand, treatment of such compounds as vitamines deserves more than a page. The essential relationship between correct diet and sufficient vitamin supply is not mentioned. While training in qualitative tests may well be given, the inclusion of quantitative estimations in a text-book of this kind is dangerous. The average nurse should not do them, they cannot be learned without special training, and the necessity of initial instruction in accurate weighing is not even referred to, though ability to weigh accurately is assumed. On the other hand the nurse's interest might well be maintained by brief mention of the conditions leading to "positive" urinary findings. A. T. CAMERON

Bacteria in Relation to Man. A Study-Text in General Microbiology. By Jean Broadhurst, Ph.D. Octavo, 304 pages, 147 illustrations. Price \$3.00. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1925.

The work is a laboratory and reading synopsis of microbiology. It could not be used by a beginner without the help of lectures, or reading of standard works, since the book consists almost entirely of headings and sub-headings under each subject and as such would be very difficult to follow. At the end of each chapter are questions for the student to work out himself. Spaces are left along each page for the purpose of making short notes or drawings.

The first chapter gives a clear and concise description of the Compound Microscope, its use and care. Following this are chapters on Green Plants, the Cell, Moulds and Yeasts, Bacteria and Protozoa, Bacterial Cultivation and Activities. A chapter on Physical and Chemical Agents deals largely with chemical substances used in disinfection and methods of sterilization.

The next section deals with the bacteria of air, water, milk, the relation of bacteria to soils and nitrogen fixation. Following this is a chapter on the economic phases of bacteriology dealing with the rôle bacteria and the lower forms of life play in the industries, canning, wine manufacturing, etc. One chapter alone deals with micro-organisms in relation to human disease. The last section gives a chronological list of the advances and discoveries in bacteriology from the earliest times when the influence of evil spirits was supposed to cause all human ills, down to the present.

Anyone interested in the history of Bacteriology would find this last chapter very useful.

The work covers a large field in a very concise form.

A. I. MCCALLA

"Smiths of a Better Quality." By Colonel George G. Nasmith, C.M.G., M.A., Ph.D., D.P.H., D.Sc., Toronto. pp. 138. \$1.00. Oxford University Press.

This book is a singularly interesting piece of health propaganda, but not propaganda in the ordinary sense because the author weaves his teaching into the form of a story of interest so captivating that the reader follows and unconsciously absorbs sound teaching on the rearing of healthy children, and the contribution to be made by home and school to the development of habits of health in mind, body and character.

Smiths of a Better Quality was written for the National Council of Education of Canada, and is a real contribution to popular education in health.

Tuberculosis. Its Prevention and Treatment. By John Laird. Second edition. 130 pages. Price \$1.75. The Macmillan Co. of Canada, Ltd., Toronto, 1925.

This is a neat little book, well printed on good paper. There are chapters dealing with "the salts of calcium," "motherhood and childhood," the digestive, lymphatic, and osseous systems, "abdominal tuberculosis" and "pulmonary tuberculosis."

A good deal of sensible advice is given such as—"the teaching of pathology is that the fortifying of the general resistance of the individual is the most important indication of all." On the whole, however, too much confidence, at least in the opinion of the reviewer, seems to be placed in the use of calcium salts and in the author's favourite prescription. This contains calcium or sodium iodide, calcium chloride or calcium lactate, liquor arsenicalis, tincture of digitalis, tincture of pulsatilla, syrup of orange, and chloroform water.

The book closes with an appendix entitled "Some thoughts and reasonings on the prevention of disease and the prolongation of life which are suggested by a comparison of the actions and the uses of the salts of calcium and potassium, in youth, middle life, and old age."

ARCHIBALD MALLOCH

Preparation of Scientific and Technical Papers. By Sam F. Trelease and Emma Sarepta Yule. 113 pages. Price \$1.50. Williams & Wilkins Co., Baltimore, 1925.

This very useful and practical book, as the authors tell us in the preface, gradually grew from notes and a pamphlet published for the use of senior and graduate students of the College of Agriculture of the University of the Philippines. The directions, rules, and hints given should prove of benefit to the prospective writer of a thesis or article on any scientific subject, be it medical or otherwise.

In general it may be said to be a guide to the arrangement of the subject matter and orderly sequence of the parts of a paper: title, introduction, material and methods, experiments and results, discussion of results, summary, and references. The book speaks of such matters as the proper use of tenses, capitals, italics, the preparation of tables and figures, punctuation, etc., but does not pretend to teach the writing of English, the avoidance of bad grammar, false metaphor, the split infinitive. For such hints we refer an author to *Notes on the Composition of Scientific Papers*, by the late Sir Clifford Allbutt, and to avoid repetition in the use of words nothing has been written to equal *Roget's Thesaurus of English Words and Phrases*.

The book under review gives one excellent piece of advice, i.e., the writer of an article should examine

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the periodical in which he hopes to publish his article so that he can make his paper conform with the general manner of arrangement adopted by that periodical. Thus the editors would be saved much labour. Instructions for correction of manuscript and for proof reading are set down and there are very useful tables of standard abbreviations of weights and measures and the titles of scientific magazines.

The reviewer, who is at the same time an assistant editor, finds so many ideas in this book with which he is in sympathy and about which he can speak feelingly that he urges every prospective author to procure a copy of it.

ARCHIBALD MALLOCH

Lord Lister. By Sir Rickman John Godlee, Bt., K.C.V.O., M.S., F.R.C.S. 3rd edition, 8vo, xvi + 636 pages. Illustrated. Price \$6.00 postpaid. Oxford 1924, at the Clarendon Press. (Oxford University Press, Toronto).

The physician or surgeon interested in medical biography who is not the happy possessor of the first (1917) or second edition of this life of Lister will welcome the appearance of this delightful volume written by a nephew who lived for many years in close personal contact with the immortal surgeon, scientist and public benefactor. The general reader will find it a story of absorbing interest, following this great man through his childhood and school days, his early medical life, the development and fruition of his observations on sepsis of wounds to the height of his career, the public recognition of his gift to mankind, to his funeral service at Westminster Abbey and the final service at West Hampstead Cemetery.

A new chapter has been added, a little new material introduced into the text and notes, but for the most part this edition remains much as when the first appeared but in new type and in attractive form. The story told by Godlee is an intimate one, and records not only his great success but his trials, his experiments and the gradual attainment of his goal. We are given a picture of the master in the leisure moments of a busy life as well as in the surgical theatre and in the lecture room. There is kindly reference to the Canadians who were his housemen, Malloch, Grasset, Stewart. Sir Michael Foster said in Toronto, "In early life Lister belonged to a society the members of which called all men friends, and now in turn, because of his inestimable beneficence and service to mankind, all men the world over call him friend." And Henley wrote of him,

"His wise, rare smile is sweet with certainties,
And seems in all his patients to compel
Such love and faith as failure cannot quell."

The volume will live as a living tribute to the life and memory of one of the greatest of our profession.

J. H. ELLIOTT

An Introduction to School Medicine. By H. Leslie Cronk, M.A., M.D., D.P.H. Crown 8vo, pp. X + 236, 8 illustrations. Price 7/6 net. H. K. Lewis & Co. Ltd., London, 1925.

In his introduction the author points out that though there are numerous books dealing with school hygiene and the diseases of infants and children, the information regarding minor departures from health of school children with their detection, causation and prevention is scattered through the literature. He gives a general view of the subject, and quotes extensively from various sources with a good bibliography appended to each chapter. The sixteen chapters include discussion of growth, malnutrition, food requirements, sleep, teeth, parasites, vision, nasal defects, tonsils, ears, postural deformities, tuberculosis and other infections, and circulatory defects. He believes that medical inspection of school children must

be regarded as having other aims than the discovery of diseases and defects, and particularly must aim at the prevention of disease in later life.

J. H. ELLIOTT

Clinical Medicine for Nurses. By Paul H. Ringer, A.B., M.D. Second revised edition. 306 pages, with diagrams and charts. Price \$2.50 net. F. A. Davis Co., Philadelphia, 1924.

The author presents a book, which covers his subject in a pleasing and scientific manner. He has dealt with a difficult problem successfully. It is so easy to say too much, or too little. To err, in the former way, is pardonable. One must remember, however, that the time, at the disposal of the pupil nurse, is limited, and the interjection of too much data is apt to be confusing. In his chapter on nephritis, the author gives a classification, which, he admits, is too elaborate, and then supplants it with another, which he deems sufficient. This might be confusing.

Paragraphs of treatment fail to emphasize the essential fact that treatment originates with the doctor in charge. It might be contended that this point should be brought home on the hospital wards. That is true, but no extra emphasis will detract from its value. The chapters on diseases, and their treatment, have been exceptionally well done. The book, besides being a text book, is an admirable work of reference for nurses.

T. W. WALKER

An Introduction to Practical Bacteriology as Applied to Medicine and Public Health. By T. J. Mackie, M.D., D.P.H., and J. E. McCartney, M.D., D.Sc., 300 pages. Price 8s. net. E. & S. Livingstone, 16 Teviot Place, Edinburgh, 1925.

This book was prepared by Mackie and McCartney, primarily for the use of students in the University of Edinburgh. It contains in small compass, a very large amount of material. Current methods, including the main principles of bacteriological technique and diagnosis, are very well collected and arranged. For students who are just beginning it is probably as handy a volume as we have seen, although it contains some exercises which perhaps would be better left for students of a more advanced grade than first year. There are one or two suggestions which the authors probably will not need, but, the coagulation point of serum is given as occurring at three different temperatures: also, Neisser's stain is given as one of the staining methods for diphtheria although it is probably the least used of all to-day, while no mention is made of the thoroughly efficient Albert's stain. On the whole it is a very useful little book.

C. S. MCKEE

Eat Your way to Health. By Robert Hugh Rose, A.B., M.D. Second edition, 230 pages, no illustrations. \$2.00 net. Funk and Wagnalls Company, New York, 1924.

In writing this book the author has kept in mind that he was presenting the subject matter for the perusal of the general public and in so doing has succeeded in a simple non-technical way of explaining to the average reader the principles of diet regulation.

The chapters are short and discuss body weight control and its importance in the maintenance of health. In explaining the significance of important facts, the author has recourse to many apt illustrations which seem to impress their nature more vividly upon the mind of the reader.

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that should be daily ingested to maintain increase or decrease the body weight. Ample variation is also given which makes the menu more attractive.

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F. W. LUNEXY

Official History of the War. Medical Services General History, Vol. iv. Medical services during the operations on the Gallipoli Peninsula; in Macedonia; in Mesopotamia; North West Persia; in East Africa; in the Aden Protectorate, and in North Russia. By Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D., and Major T. J. Mitchell, D.S.O., R.A.M.C. Pages xvi + 711, 52 sketch maps, 17 chart and diagrams, 178 photographs in text, 101 illustrations of ambulance transport. London. H. M. Stationery Office, 1924. 25/-net.

This volume of the official history of the medical services in the great war covers operations on such a wide front as almost merit the title of "World War" which our American friends have given to the late struggle. The battle line was indeed "far-flung", and the work of the medical services was of a most diversified nature. Varying conditions of climate and terrain led to various expedients for meeting the unusual circumstances. For the most part the care of the sick and wounded was admirably carried out, although there were serious breakdowns such as occurred in Mesopotamia, through no fault of the medical organization.

The work is profusely illustrated, and there are many sketch maps and diagrams which are most informing. There does not seem to have been the ban on cameras which existed in France, where much valuable historical matter was lost on account of the prohibition of cameras in that area. It is perhaps not generally known that the British official objection to photographs of the war during the early months was overcome through the efforts of Lord Beaverbrook. Once started, the British official photographs outstripped those of all other allies. About half the book is made up of the history of the Gallipoli and Mesopotamia campaigns. A medical officer who took part in the operations in Mesopotamia and Northwest Persia has the following to say about them.

"The medical arrangements for the campaign in Mesopotamia, from October, 1914, until demobilization in 1919, are discussed in chapters vi. to xv. of vol. iv. of the Official History of the War, Medical Services, General History. Chapter xvi. deals with operations in Northwest Persia. I served in Mesopotamia from September, 1916, until July, 1918, being attached to No. 16 C.C.S. for almost the whole of the period. From July, 1918, until February, 1920, I was attached to the force operating in Northwest Persia. As far as I am aware, the statements in the chapter covering movements of medical units are substantially correct. All medical units in Mesopotamia were subject to subdivision at any time. No. 16 C.C.S. frequently had one or more parties with considerable equipment detached for isolated duty, and for almost a year was divided into two almost equal parts separated by 300 or 400 miles. Even general hospitals were divided at times. Many difficulties were met with. The climate was trying, the thermometer registering 125° F. on one occasion, and the hot season lasted from April till October or November. Dust storms were frequent, and as no buildings existed, the dust covered men, wounds, dressings, and food. The roads were very dusty in summer, and very deep with mud in the rainy season. The high incidence of tropical diseases and the debilitating effect of the prolonged hot season may be understood from the unofficial statement that in 1916 the admissions to hospital from sickness alone

were twice the total strength of the force at any one time. The transfers of sick and wounded to India at one time were 10 per cent. of the force per month."

"Despite the efforts of the supply and transport corps the food was frequently unsuitable, especially as regarded fresh fruit and vegetables. All the fuel and nearly all the food had to be brought from India, 2,000 miles away, and then transported up river by a fleet of steamers, which at first was quite inadequate in number. This failure of transportation was responsible for the inability to evacuate sick and wounded, so that for many days at a time some field ambulances were forced to act as stationary hospitals. The great shortage of medical personnel was remedied about the time of my arrival in the country."

In East Africa the difficulties were great, and much improvisation had to be resorted to. The following quotation from a letter written by an officer who served in this campaign is of interest:

"The movements of troops and military engagements are as far as I know correct, and the description of the country gives the reader a very good idea of the obstacles in the way of satisfactory medical operations. There is criticism of the fact that not sufficient medical provision was made for the evacuation of casualties before each advance. Undoubtedly this criticism is justified, but there was a reason for such apparent lack of foresight. In East Africa, all through the operations, the troops were optimistic. There was never any question in our minds but that the next advance would decisively defeat and scatter the enemy in the first few days. Usually we hoped to surround and capture the greater part of the enemy forces before he could retreat. When Van Lettow aided by a more intimate knowledge of the country skillfully retreated, our troops pushed on until the lines of communication became too long, too thinly manned, and inadequate.

A further criticism, was the lack of knowledge shown by British officers, and particularly by medical officers, in regard to tropical conditions, and sanitation, which was essential in the tropics. For my part, I had been in Mesopotamia prior to East Africa and such safety measures as mosquito nets, breeches instead of shorts after dark, boiling all drinking water, and cooking all food immediately before eating, (toasting the bread and biscuits) were second nature to me, but the average European knew very little of these things and seldom bothered to learn. As a consequence amongst the men I knew there was much sickness, especially malaria and dysentery, that should have been avoided. A simple solution for these conditions would have been a compulsory school for all officers on the outward voyage. This voyage to the eastern theatres took from one to two months, and four hours tuition a day under a competent officer instructor would have given the officers not only a knowledge of the tropical conditions, but also a working knowledge of the language of the country to which they were bound. I myself learned enough Swahili to command an independent section of a field ambulance with two hundred Swahili stretcher bearers and carriers in two or three weeks. By a competent instructor, I mean any intelligent officer who had had a few years service in the East, preferably a medical man. The N.C.O.'s and men should have had similar but simpler courses. I had several long voyages during the war, and during these, officers and men had nothing to do bar an occasional life-boat drill. I feel very strongly that a great deal of wastage in the East might have been avoided in this manner."

Perhaps the British army never operated under less familiar conditions than were met with in North Russia. The illustrations in this chapter are particularly interesting to Canadians whose country climatically resembles that of Russia.

The appendices contain much valuable information for reference. It is interesting to note that of the fourteen Victoria Crosses awarded, two came to the C.A.M.C. In these days, when so many people seem



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All of which goes to show that conveniences are not gratuitous, but must be paid for by either the manufacturer or the user. In this case the manufacturer pays the major part of the price in the care required for assaying, sterilizing and encasing the medicinal solutions; but the user is supposed to keep the ampoules in their respective packages, and not let them lie around loose, until they are needed! In some cases, too, it is quite important that the date stamped on the package be consulted, for the ampouled solutions are not all indefinitely stable. This reasonable care cannot be considered a high price to pay for the convenience of having at hand a sterilized solution in individual doses for subcutaneous, intramuscular or intravenous administration.

Some of the merits of this class of products are tersely set forth in the advertisement on "Ampoules," by Parke, Davis & Co., which appears in this issue of the *Canadian Medical Association Journal*.

Life Insurance Without Medical Examination.—

The British Medical Association does not look favorably on life insurance without medical examination. The medical secretary not infrequently receives letters from members informing him that they have been asked to give information about the previous health of patients who have been accepted for life insurance without medical examination, and who have died shortly afterward. His advice to them is invariably that they should not give any information without the written consent of the relatives of the deceased. The object of insurance companies in making such inquiries is the chance of getting information regarding the previous health of the deceased which may enable them to dispute the claim and thereby evade a financial liability without taking the usual steps to protect themselves against undue risk. Whether a fee is offered or not is considered beside the point. The insurance company seems to be looking to the physician to pull the chestnuts out of the fire. The association advises physicians to refuse information and to inform the relatives that they should tell the insurance company quite plainly that if the claim is not settled promptly they will sue in the courts.

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to have forgotten the war, it may be worth while quoting from Appendix "C".

"Capt. F. A. C. Scrimger, C.A.M.C., Royal Montreal Regiment. On the afternoon of 25th April, 1915, in the neighbourhood of Ypres, when in charge of an advanced dressing station in some farm buildings, which were being shelled by the enemy, he directed under heavy fire the removal of the wounded, and he himself carried out a severely wounded officer out of the stable in search of a place of greater safety. When he was unable to carry this officer further, he remained with him under fire till help could be obtained. During the very heavy fighting between the 22nd and 25th April, Capt. Scrimger displayed continuously day and night the greatest devotion to duty among the wounded at the front.

Capt. B. S. Hutcheson, C.A.M.C., 1st Central Ontario Regiment. For most conspicuous bravery and

devotion to duty on 2nd September, when under most intense shell, machine-gun and rifle fire, he went through the Queant-Drocourt support line with the battalion. Without hesitation and with utter disregard of personal safety, he remained on the field until every wounded man had been attended to. He dressed the wounds of a seriously wounded officer under terrific machine-gun and shell fire, and with the assistance of prisoners and of his own men, succeeded in evacuating him to safety, despite the fact that the bearer party suffered heavy casualties.

Immediately afterwards he rushed forward, in full view of the enemy, under heavy machine-gun and rifle fire, to tend to a wounded sergeant, and having placed him in a shell-hole, dressed his wounds. Capt. Hutcheson performed many similar gallant acts, and, by his coolness and devotion to duty, many lives were saved."

J. H. ELLIOTT

Books Received

Clinical Therapeutics—By Alfred Martinet, M.D. Second edition. Vols. i and ii. 1800 pages, 332 engravings. Price \$16.00 net. F. A. Davis Co., Philadelphia, 1925.

A Laboratory Manual of Physiological Chemistry—By Elbert W. Rockwood, M.D., Ph.D., and Paul Reed Rockwood, M.D. Fifth edition, revised and enlarged. 407 pages, 47 illustrations. Price \$4.00 net. F. A. Davis Co., Philadelphia, 1924.

Clinical Medicine for Nurses—By Paul H. Ringer, A.B., M.D. Second revised edition. 306 pages, with diagrams and charts. Price \$2.50 net. F. A. Davis Co., Philadelphia, 1924.

Leprosy—By Sir Leonard Rogers, C.I.E., M.D. and Ernest Muir, M.D. 301 pages, illustrated. Price \$3.75 net. The Macmillan Co. of Canada Ltd., Toronto, 1925.

Tuberculosis. Its Prevention and Treatment—By John Laird, M.D. Second edition. 130 pages. Price \$1.75 net. The Macmillan Co. of Canada, Ltd., Toronto, 1925.

Pseudo-Appendicitis. A study of Mechanical Syndromes of the right Lower Quadrant Simulating Appendicitis—By Thierry de Martel and Edouard Antoine. Translated by James A. Evans, A.B., M.D. 211 pages, 41 engravings. Price \$3.00 net. F. A. Davis Co., Philadelphia, 1925.

The Bacteriology of Food—By Cuthbert Dukes, M.D., M.Sc., D.P.H. 180 pages, 25 illustrations. Price 7/6d. net. The H. K. Lewis & Co. Ltd., 28 Gower Place, London, 1925.

Essentials of Infant Feeding—By E. A. Barton, M.D. 80 pages. Price 3/6d. H. K. Lewis & Co. Ltd., 28 Gower Place, London, 1925.

The Statics of the Female Pelvic Viscera. Vol. ii.—By R. H. Paramore, M.D., F.R.C.S. 424 pages, 58 illustrations. Price 24/- net. The H. K. Lewis & Co. Ltd., 28 Gower Place, London, 1925.

William Crawford Gorgas, His Life and Work—By Marie D. Gorgas and Burton J. Hendrick. 359 pages, illustrated. Price \$5.00 net. Lea & Febiger, Philadelphia, 1924.

CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES

The Ophthalmological Society of the United Kingdom, together with its affiliated Societies, has decided to hold in London from July 14th to 17th, 1925, a Convention of English-speaking Ophthalmological Societies and Associations, all members of which are invited to attend. On the evening of Monday, July 13th, before the opening of the Convention, a Reception will be held at the Royal College of Surgeons of England. Four mornings, two afternoons and one evening will be devoted to the Scientific work of the Convention. The Bowman Lecture will be delivered by Sir John Parsons, C.B.E., F.R.S., on the afternoon of

Thursday, July 16th. On the Wednesday evening there will be a Symposium on the subject of "The Evolution of Binocular Vision," by the following selected speakers: Sir Charles Sherrington, O.M., G.B.E., P.R.S.; Sir Arthur Keith, F.R.S.; Sir Frederick Mott, K.B.E., F.R.S.; Prof. Elliot Smith, F.R.S., and Prof. S. E. Whitnall. "Microscopy of the Living Eye" has been chosen as a subject for discussion. It will be opened by Dr. Gordon Byers, Montreal; Dr. Arthur J. Bedell, Albany, U.S.A.; Mr. Harrison Butler; and Mr. Basil Graves.—R. Foster Moore, 91 Harley St. W.1., London, Secretary.

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The Medical Certificate as a Prerequisite for Marriage.—Professor Finger recently discussed, before an invited gathering, the question of requiring a medical certificate as a prerequisite for the securing of a marriage license, as is being done by legislative enactment in several European countries. As the speaker explained, the purpose of the measure is to protect posterity and the matrimonial partner from disease. The main diseases for which evidence is sought are mental affections, mental inferiority, tuberculosis and venereal diseases. The internists attach great weight to the discovery of traces of mental disease. As for the venereal diseases, the dermatologic specialists are not so convinced of the value of such a certificate, since they are somewhat skeptical of the results. If sexual intercourse could be confined to married persons, of which there seems little likelihood for the present, they would have more confidence in the measure. It is a well known fact that intercourse before marriage or in violation of the marriage vow is very frequent. Under such conditions, a medical certificate as a prerequisite for marriage would seem to be a mere formality. Furthermore, the certificate of a physician that an applicant for a marriage certificate is free from disease has only momentary value. Even at the time the certificate is executed, a latent infection may be present. Nor does the certificate give any assurance for the future, since it is possible that the applicant may expose himself to infection the day after receiving the document. It would seem therefore useless to demand such a certificate. Furthermore, a knowledge of a patient's past history is often needed in order to diagnose an affection. If the applicant for a certificate chooses to withhold information that might be derogatory to himself, an exact opinion as to his present state of health may be impossible for the reason that the examination alone, without knowledge of previous treatment, does not furnish an adequate basis for judgment. Even a blood examination gives no positive proof of perfect health. A mere negative statement that no evidence of disease can be found does not constitute any real basis for the adoption of a law. The only possible way of securing reliable information would be to require the keeping of health record cards for all inhabitants, on which would be recorded

brief statements in regard to all afflictions from which persons had suffered from their childhood up, which, for the time being, at least, does not seem feasible. Specialists are therefore inclined to take the view with reference to the question that no person who has been ill should be allowed to marry until he has secured permission from his attending physician.—Vienna Correspondence, *Journal Am. Med. Ass.*, March 28, 1925.

Osteopathy in England.—In reply to a critic who complained that osteopaths had been described as "unqualified practitioners," the *Medical Press and Circular* pointed out that "for more than four hundred years the medical profession had been under the authority, first of the Church, second of the Royal College of Physicians and later of the General Medical Council." Moreover, during this whole period the practice of medicine had been confined to those who had completed a course of study which, although varying from time to time, was always considered necessary for the protection of the public against inefficient pretenders. The monopolies granted to the Church and later to the college were found to be mischievous and in turn were abrogated. Authority over the medical profession is now in the hands of the General Medical Council, which requires that before any one is granted a license to practice medicine he must have studied a full curriculum of subjects, each and all of which are deemed necessary to make him competent to deal with what may mean the life or death of his patients and so that he can deal intelligently with any type of case that may present itself. The comment ends with the statement that "these regulations have been judged necessary for the protection of the public, whose welfare is the prime object of the medical profession. When it fails in proficiency or in its duty, it will be time to consider whether the public can be better served by others; but not until then."—*Jour. A. M. A.*, March 21, 1925.

"The skill of the physician shall lift up his head; and in the sight of great men he shall be in admiration."—*Ecclesiasticus*.

"Then give place to the physician for the Lord hath created him."—*Ecclesiasticus*.